Technical Submittal

Item	Description	Brand	Logo	Approval	Company Origin
	ADW-Resettable linear heat detector	Securiton	SECURITON	UL Listed & FM Approved	Switzerland

Alexandria Branch: 7, Amin Abu Zeid St.,
Saba Basha, Alexandria, Egypt.
Tel.& Fax: +2 (03) 58 57 668 / 58 42 623
Mob.: +2 011 205 333 29

Cairo Branch: 4 Mohamed Said St, Omar Ibn El Khattab St,
El Sefarat District, Nasr City, Cairo.
Tel.& Fax: +2 (02) 26 77 70 41 / +2 (02) 26 77 69 93
Mob.: +2 011 009 354 46

sales@adsystems.info
www.wataniasystems.com

Product information

Where conventional fire detectors reach their physical limits, the SecuriSens ADW 535 line-type heat detector comes into play. The intelligent line-type heat detector works perfectly, even under the most difficult conditions. Whether the fully automatic monitoring of large areas, resisting corrosive gases, extreme humidity and high temperatures, or differentiating between false alarms and real danger – the list of requirements for a state-of-the-art line-type heat detector is both long and detailed.

SecuriSens ADW 535

Line-type heat detector

Design and function

The integrated SecuriSens ADW 535 line-type heat detector combines a proven functional principle with the latest developments in sensor and processor technology.
A sensing tube filled with normal air is installed in the area to be monitored. A fully electronic pressure sensor permanently records the pressure in the sensing tube. This is monitored constantly in the processing electronics and compared with the alarm criteria. Diverse setting options are offered directly on the device via EasyConfig or using the comfortable ADW Config tool for perfect adaptation to existing environmental conditions. The Dynamic Heat Watch (DHW) technology ensures that a brief temperature increase caused by the ambient conditions does not result in a false alarm.

Applications

Thanks to the extremely tough sensing tube, the SecuriSens ADW 535 can be deployed in many applications where conventional fire detectors do not work. With its long service life and maintenance-free design, the ADW 535 is also ideal in applications where detection properties must remain constant over the entire product service life.

Typical applications:

- Tunnels: road tunnels, metro and railway tunnels, utility and cable tunnels
- Underground garages, vehicle silos
- Food industry, industrial kitchens, large commercial bakeries
- Alcohol processing, distilleries
- Chemical industry, refineries, oil tanks
- Waste incineration plants
- Outdoor applications: loading platforms (flying roofs), historical bridges, fuel warehouses, towers
- High-temperature applications such as: paint shops, steel plants, kilns, climate chambers, gas turbines, engine test benches
- And many other applications, e. g. underfloor monitoring in rolling stock, marine applications

Sensing tubes

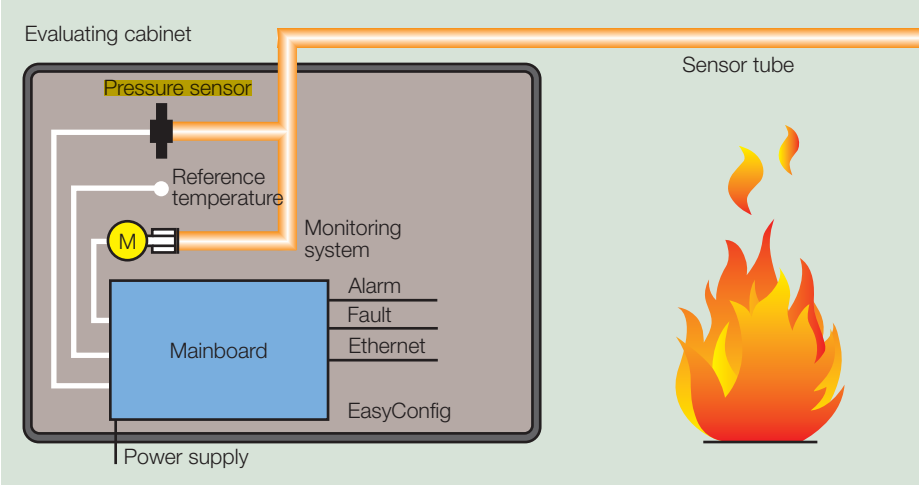
Depending on the application, various sensing tubes are used (all of which have VdS approval):

- Copper: standard applications, property surveillance
- Stainless steel: food industry and high-temperature applications
- PTFE (Teflon): aggressive ambient conditions (e.g. chemical industry)

- Integrated line-type heat detector for 1 or 2 sensing tubes (Double Tube Technology)
- Based on proven technology
- Fastest heat detector with fully programmable response behaviour plus differential and maximal evaluation
- Intelligent alarm verification with DHW technology (Dynamic Heat Watch)
- Available as standard and Heavy Duty version (with Atex approval)
- Sensing tubes of copper, stainless steel or Teflon withstand extremely severe ambient conditions and high temperatures; can be installed in Ex areas
- High level of functional safety thanks to fully automatic sensing tube monitoring
- High-performance software: ADW HeatCalc for planning, ADW Config for configuration and maintenance
- EN 54-22 and UL/FM approved

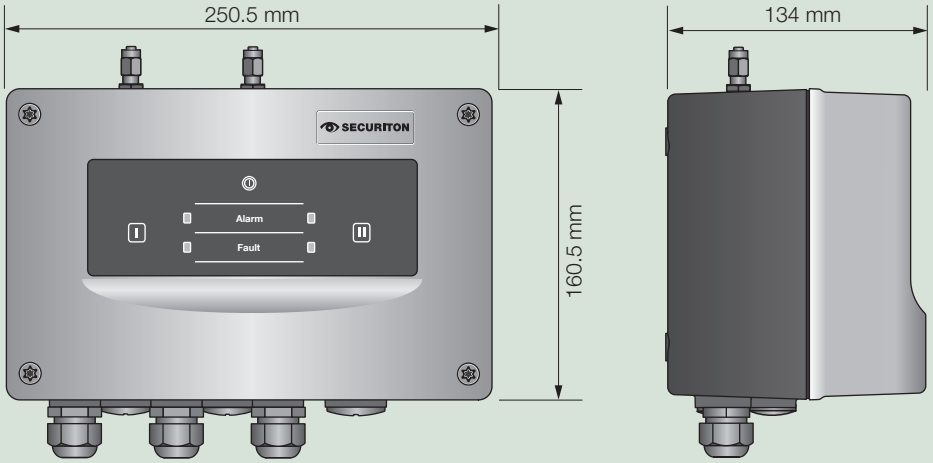
ADW HeatCalc

ADW HeatCalc is used for sketching the sensing tube system and calculating the necessary system settings. The PC tool is rounded off by the parts list and report for the plant documentation.



SECURITON

Dimensions ADW 535-1/-2



Specifications subject to change without notice. Delivery subject to availability.

Technical data		ADW 535-1	ADW 535-2
Supply voltage range		EN 54 9.0–30 VDC/FM/UL/10.5–29 VDC	EN 54 9.0–30 VDC/FM/UL/10.5–29 VDC
Power consumption (24 VDC)	Normal operation	35 mA	43 mA
	Self-test	210 mA (for approx. 180 sec)	230 mA (for approx. 180 sec)
Sensing tubes	Number	1	2
Sensing tube length with/without EN 54-22		max. 115 m/200 m	max. 2 × 115 m/2 × 200 m
Sensing tube monitoring		Automatic self-test monitors sensing tube for leaks, pipe breakage and crushing	
Interfaces	Relay/o. C.	2 (Alarm, Fault)	4 (Alarm I & II/Fault I & II)
	Network/PC tool	Ethernet	Ethernet
	Inputs	Reset, day/night, reference	Reset, day/night, reference
Relay contacts		50 VDC/1 A (UL 30 VDC)	50 VDC/1 A (UL 30 VDC)
Optional modules	max. 4	1 or 2 RIM 36, 1 SIM 35, 1 XLM 35	1 or 2 RIM 36, 1 SIM 35, 1 XLM 35
Standards EN 54-22/FM 3210/UL 521		Classes A1I, A2I, BI, CI, DI, EI, FI, GI	Classes A1I, A2I, BI, CI, DI, EI, FI, GI
NFPA 72		Ordinary, intermediate, high	Ordinary, intermediate, high
Approvals	All versions	VdS (G 214 076), CE, UL, FM	VdS (G 214 076), CE, UL, FM
	HDx only	Atex	Atex
Operating temp./humidity	Sensor Control Unit	–30 – +70 °C/95% RH, –40 °C auxiliary heating	–30 – +70 °C/95% RH, –40 °C auxiliary heating
	Sensing tubes	–40 – +300 °C/100% RH (material-dependent)	–40 – +300 °C/100% RH (material-dependent)
Housing ADW 535 –1 and –2	Dimensions	250.5 × 160.5 × 134 mm (W × H × D)	250.5 × 160.5 × 134 mm (W × H × D)
	Colour	Light grey RAL 280 70 05, Charcoal RAL 300 20 05	Light grey RAL 280 70 05, Charcoal RAL 300 20 05
	Material, weight	ABS-Blend, UL 94-V0, approx. 1600 g	ABS-Blend, UL 94-V0, approx. 2000 g
	Packaging	265 × 261 × 168 mm (W × H × D)	265 × 261 × 168 mm (W × H × D)
Protection class	EN 60529	IP 65	IP 65
Housing ADW 535 –1HDx and –2HDx	Dimensions	260 × 160 × 134 mm (W × H × D)	260 × 160 × 134 mm (W × H × D)
	Colour	Graphite black RAL 9011	Graphite black RAL 9011
	Material, weight	Duroplast, approx. 2100 g	Duroplast, approx. 2500 g
	Packaging	272 × 238 × 170 mm (W × H × D)	272 × 238 × 170 mm (W × H × D)
Protection class	EN 60529	IP 66	IP 66
Display and operation	LED	1 (green) operation, 1 (red) alarm, 1 (yellow) fault	1 (green) operation, 2 (red) alarm, 2 (yellow) fault
Event memory for analogue values	Recording	640,000 events (installed SD card) Up to 66 days (installed SD card)	640,000 events (installed SD card) Up to 66 days (installed SD card)

Product line	
ADW 535-1/2	Line-type heat detector for 1 or 2 sensing tubes
ADW 535-1/2HDx	Line-type heat detector for 1 or 2 sensing tubes for applications in difficult ambient conditions and Ex areas

Securiton AG
Alarm and Security Systems
Alpenstrasse 20, 3052 Zollikofen, Switzerland
Tel. +41 31 910 11 22, Fax +41 31 911 25 32
www.securiton.com, info@securiton.com

A company of the Swiss Securitas Group

SECURITON

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ADW 535

Line type heat detector

As of production version 061222 and FW version 01.04.xx

The ADW 535 is an integrating line type heat detector that consists of the evaluation unit and one or two sensing tubes. The sensing tube is made of copper (Cu), stainless steel (St) or Teflon (PTFE).

Apart from the processor-controlled evaluation electronics, there is one fully electronic pressure sensor and one artificial pressure generation device in the evaluation unit per sensing tube.

Fig. 1 ADW 535-2

Description

The working principle is based on the volume expansion of gas due to heating in a pneumatically sealed system and the consequential pressure increase. If the pressure in the sensing tube rises to values as defined by the ADW 535 firmware, the system triggers an alarm.

The pneumatically sealed system is composed of the sensing tube that is locally installed in the area to be monitored and is sealed at the end with a terminal screw fitting. The sensing tube is connected to the evaluation unit, in which the pneumatic line is wired to the LTHD supervising unit. The supervising unit consists of a fully electronic differential pressure sensor, a pressure pump and a step motor. There is regular ambient air in the entire pneumatic volume.

The ADW 535 with two sensing tubes has two completely independent pneumatic circuits, thus it also has two supervising units. All control circuitry and measured value recordings are individually designed for each sensing tube.

The ADW 535 is available in four versions:

Thermoplastic housing for normal applications:

- ADW 535-1 for 1 sensing tube, 2 relays/OCs
- ADW 535-2 for 2 sensing tubes, 4 relays/OCs

Housing for difficult ambient conditions and Ex applications (ATEX) ➔ see **T 140 458** and **T 140 459**:

- ADW 535-1HDx for 1 sensing tube, 2 relays/OCs
- ADW 535-2HDx for 2 sensing tubes, 4 relays/OCs

The ADW 535 has four slots for expansion modules. The following modules can be fitted:

- XLM 35 SecuriLine module (**not UL/ULC tested**);
- ML-SFD M-Line module (**not UL/ULC tested**);
- RIM 36 Relay interface module with 5 relays (2 units);
- SIM 35 Serial interface module.

The ADW 535 can be connected to a superordinate FACP by means of potential-free change-over contacts.

With the installation of an **XLM 35** resp. **ML-SFD**, the ADW 535 can be ideally connected via the addressable loop to the SecuriFire and Integral fire alarm systems.

The **RIM 36** is available as a further installation option. This module makes the individual alarms and the pre-signals “Diff” and “Max” available as relay contacts. The relays are also freely programmable via the “ADW Config” configuration software.

Up to 250 ADWs can be networked with the **SIM 35** and can also be visualised and operated on a PC using “ADW Config”.

The ADW has an SD memory card to log operating data.

Thanks to its excellent properties under severe ambient conditions, the ADW 535 is used wherever problems are to be expected owing to latent disturbance variables during operation such that optimal protection can no longer be guaranteed with conventional point detectors. Examples of such applications:

- Road, railway and underground railway tunnels, underground mining;
- Paint spray and paint shops, chemical industry, tank storage, etc. (for Ex zones see “**T 140 458** and **T 140 459**);
- Car park halls, car decks on ships, loading platforms.

The ADW 535 can also be deployed in areas where conventional point detectors are used. Local regulations and provisions must be observed from case to case.

The names and specifications of the **EN 54-22** product standard contained in this documentation relate to the draft issue **prEN 54-22**.

The response behaviour of the ADW 535 is tested in compliance with:

- **EN 54-22** ➔ classes **A1I** to **GI**;
- **UL 521 – ULC-S530-M91** ➔ acc. to EN 54-22 cl. **A1I** to **GI**;
- **FM 3210** / **NFPA 72** = classes **Ordinary**, **Intermediate**, **High** – **Spacings** 15 ft / 20 ft / 25 ft / 30 ft / 40 ft;
- **RVS** ➔ in acc. with the requirements for road tunnels (AT);
- **KFI** ➔ in acc. with the requirements for road tunnels (KR).

When setting up ADW 535 fire alarm systems, the information and specifications in “**Technical Description ADW 535**” must be observed and adhered to. This includes among others:

- **General** Section 1
- **Planning** Section 4
- **Mounting** Section 5
- **Installation** Section 6
- **Commissioning** Section 7
- **Operation** Section 8

Connection

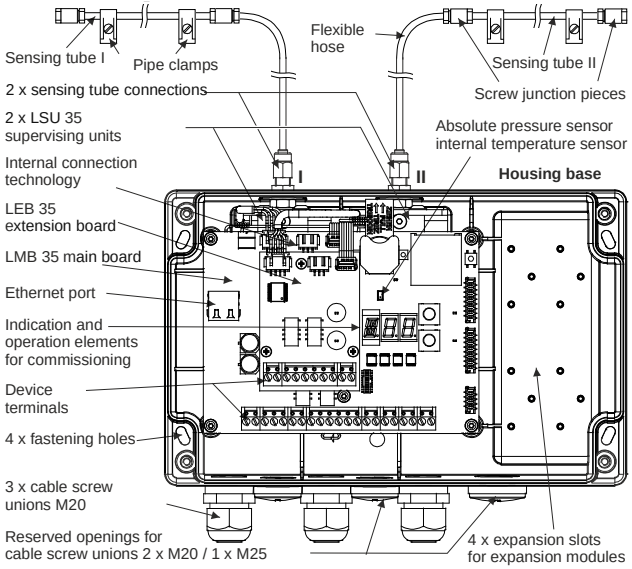
Sensing tube I
Pipe clamps
Flexible hose
Sensing tube II
2 x sensing tube connections
Screw junction pieces
2 x LSU 35 supervising units
Absolute pressure sensor internal temperature sensor
Internal connection technology
I
II
Housing base
LEB 35 extension board
LMB 35 main board
Ethernet port
Indication and operation elements for commissioning
Device terminals
4 x fastening holes
3 x cable screw unions M20
Reserved openings for cable screw unions 2 x M20 / 1 x M25
4 x expansion slots for expansion modules

Fig. 2 View inside the ADW 535-2

Devices connection on the LMB 35 main board

The electrical connection is by means of plug-in terminals.

Terminal	Signal	
1	PWR +	Main power supply line
2	PWR –	9 to 30 VDC (UL/FM = 10.6 – 27)
3	PWR +	Redundant supply line
4	PWR –	9 to 30 VDC (UL/FM = 10.6 – 27)
5	+OC	+ Supply (for OC consumers)
6	Flt OC Out1	Output Fault I, OC
7	Al OC Out1	Output Alarm I, OC
8	Rel Flt1 (“NO”)	
9	Rel Flt1 (“NC”)	Fault I ①
10	Rel Flt1 “COM”	
11	Rel Al1 “NO”	
12	Rel Al1 “NC”	Alarm I
13	Rel Al1 “COM”	
14	TempSens1 +	External temperature sensor I
15	TempSens1 –	
16	ResExt +	Reset external input ②
17	ResExt –	(opto-isolator input)
18	InPrg1 +	Day/night control from FACP
19	InPrg1 –	(opto-isolator input)
20	InPrg2 +	Reserve, no function
21	InPrg2 –	(opto-isolator input)

① The relay “Fault” is picked up in the quiescent state ➔ contact te. 10/8 closed, 10/9 open (ADW 535 under voltage; no fault event present).

② “Reset external” input: Operation must not be freely accessible and may be activated only by authorised persons.

Device connection on the LEB 35 extension board

On version ADW 535-2 the connection for the sensing tube II is on the LEB 35.

Terminal	Signal	
22	Flt OC Out2	Output Fault II, OC
23	Al OC Out2	Output Alarm II, OC
24	Rel Flt2 (“NO”)	
25	Rel Flt2 (“NC”)	Fault II ①
26	Rel Flt2 “COM”	
27	Rel Al2 “NO”	
28	Rel Al2 “NC”	Alarm II
29	Rel Al2 “COM”	
30	TempSens2 +	External temperature sensor II
31	TempSens2 –	

① The relay “Fault” is picked up in the quiescent state ➔ contact te. 26/24 closed, 26/25 open (ADW 535 under voltage; no fault event present).

Terminal assignment of the additional modules

The terminal assignments of the additional modules are shown in the corresponding data sheets (see “Article numbers and spare parts”).

External temperature sensor ART 535

The purpose of external temperature sensor ART 535 is to compensate (adjust) the maximum response behaviour and must be used for:

- Applications compliant with EN 54-22, classes Cl to Gl;
- always (for all response grades or applications), as soon as the application temperature in the monitored area deviates more than 20°C from the temperature of the evaluation unit.

The ART 535 is to be introduced to the monitored area and positioned so that it is optimally exposed to the local ambient temperatures.

Connection principle

Examples and information about the connection principle are found in Technical Description ADW 535, T 140 358, Sec. 6.

Displays

The following displays are included on the evaluation unit (may be doubled on ADW 535-2 **I** and **II**):

ⓘ green	Alarm red	Fault yellow	Function / state
			System off (no voltage)
On		½ s T	System inactive / Sensing tube deactivated
On			Quiescent state
On		1 s T	Start phase of the system (approx. 60 s)
On		1 s T	Sensing tube fault, check running ① / ②
On		On	Sensing tube fault, fault triggered
On		On	Gen. fault triggered (internal faults)
On	1 s T		Pre-signal (Diff or Max)
On	On		Alarm (Diff or Max)

① No fault triggered (only if negative check procedure ➔ LED “Fault” continuous display).

② Does not apply to cyclical check.

T = flashing display; ½ s cycle / 1 s cycle

The **LMB 35** main board includes additional indicators. More information is available in Technical Description ADW 535, T 140 358, Sec. 8.5.2.

Programming

The ADW 535 has several switch positions with permanently assigned parameters for each sensing tube material used. The designation ***M*** > ***TE/ME/TEE*** in switch position indicates the sensing tube material used:
TE = teflon; ***ME*** = metal (Cu/St); ***TEE*** = teflon Ex; **Important**: the choice of material always applies to both sensing tubes;

- Response behaviour acc. to **EN 54-22**, classes **A1l** to **Gl**,
  ➔ ***C*** > ***A1*** to ***G***;
- Response behaviour acc. to **NFPA 72**, classes **Ordinary**, **Intermediate**, **High**,
  ➔ ***C*** > ***No***, ***NI***, ***NH*** (every 30 ft Spacing);
- Response behaviour for road tunnels according to **RVS** (AT),
  ➔ ***C*** > ***T1***;
- Response behaviour for road tunnels according to **KFI** (KR),
  ➔ ***C*** > ***T2*** (***T3*** for laboratory tests "Class A");
- Normative systems limits (EN 54-22) concerning sensing tube monitoring,
  ➔ ***C*** > ***W00*** to ***W03***;
- Non-normative system limits concerning sensing tube monitoring,
  ➔ ***C*** > ***W04*** to ***W09***;
- Parameterised positions ***X01*** to ***X03*** for saving settings after using "ADW HeatCalc" and/or changes in the device configuration via "ADW Config"

Switch positions on the LMB 35 main board

Pos.	Area / Display	Purpose
C	***A1*** to ***T3*** / ↳ ***M*** (***TE*** / ***ME*** / ***TEE***) ↳ ***L01*** / ***L02*** ↳ ***015*** to ***200*** (per tube) ***W00*** to ***W09***	**Normative system limits** Selection sensing tube material acc. to "Programming" ↳ Sensing tube length I / II ↳ Sensing tube length in m **Sensing tube monitoring**
E	***E01*** to ***E99*** ↳ ***G00*** to ***G99***	**Event mem.**; ***E01*** – ***E99*** ↳ Event group ***G00*** – ***G99***
F	***V00.*** to ***99*** (3 blocks)	Read out **firmware version**
I	***IA1*** / ***IA2*** ***IF1*** / ***IF2*** ***IP1*** / ***IP2*** ***IC1*** / ***IC2***	**Triggering**; test alarm (***IA.***) Test fault ***IF.***) Test pre-signal ***IP.***) Test check ***IC.***)
N	Polling (***RE***) Setting (***SE***) ↳ ***FSE***	IP configuration; Polling and factory setting
o	***o00***	**Log off expansion modules**; (optional modules, all)
P	***UP1*** / ***UP2*** ***UL1*** / ***UL2*** ***TP1*** / ***TP2*** ***MP1*** / ***MP2***	**Pressure values output**; "Initial reset pressure" (***UP.***) "Initial reset length" (***UL.***) "Test pressure" (***TP.***) "Absolute pressure" (***MP.***)
R	***R00***	Perform **state reset**
S	***Ch1*** / ***Ch2*** ↳ ***on*** / ***oFF***	**Sensor activation**; sensing tube I / II (***Ch1*** / ***Ch2***)
T	***Y10*** to ***Y99*** / ***M01*** to ***M12*** ***d01*** to ***d31*** / ***H00*** to ***H23*** ***M00*** to ***M59*** / ***S00*** to ***S59***	**Date and time**; Poll (***RE***), Setting (***SE***)
U	***U01*** / ***U02***	Start **initial reset** (per tube)
X	***X01*** to ***X03***	**can be parameterised** (with ADW Config)

The table lists only the available switch positions (information about the input procedure, see Technical description T 140 358, Sec. 8.3).

General information about system limits

When using an ADW 535 line type heat detector, the system limits below apply and ensure compliance to EN 54-22 / NFPA 72 / RVS / KFI requirements.

Length of the sensing tube per evaluation channel ① (Fig. 3 "B")		
Application	**Copper / Stainless steel**	**Teflon**
EN 54-22, A1l to Gl ①	10 – 140 m	10 – 125 m ① only A1l to Bl
NFPA 72, NO / NI / NH ①	10 – 200 m	10 – 150 m ① only NO
RVS, tunnel	10 – 200 m	10 – 150 m
KFI, tunnel	10 – 115 m	10 – 105 m
outside standard ②	10 – 200 m ②	10 – 150 m

① The **Teflon** sensing tube materials for classes **Cl to Gl may not be used** according to **EN 54-22** and classes **NI** and **NH** according to **NFPA 72**.
② For applications under less than 15 m and outside a specified standard, the "ADW HeatCalc" calculation software must always be used. The calculated trigger thresholds are written with the "ADW Config" calculation software to switch positions ***X01*** to ***X03***.

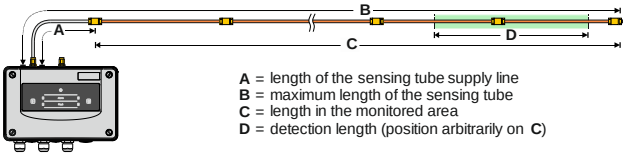
A
B
C
D
A = length of the sensing tube supply line
B = maximum length of the sensing tube
C = length in the monitored area
D = detection length (position arbitrarily on C)

Fig. 3 Sensing tube lengths definition

System limits without "ADW HeatCalc" calculation

The system limits apply to planning without the "ADW HeatCalc" calculation software. There are two areas, with the following meaning:

- **Normative system limits** acc. to "Programming", positions ***C*** > ***A1*** to ***T3***
- **Non-normative system limits** concerning sensing tube monitoring compliant with EN 54-22, positions ***W04*** to ***W09***.

Normative system limits

Positions ***C*** > ***A1*** to ***T3*** have configured values which are necessary for alarm response sensitivity and sensing tube monitoring compliant with the relevant standards or guidelines (see also Sec. "Programming").

Non-normative system limits

Settings ***W04*** to ***W09*** contain **non-normative system limits** concerning **sensing tube monitoring compliant with EN 54-22**. The alarm response sensitivity compliant with EN 54-22 is not influenced but rather corresponds to the settings of the additionally set ***EasyConfig*** switch positions ***C*** > ***A1*** to ***G***.

For more information about switch positions ***W00*** to ***W09*** with regard to sensing tube monitoring, please refer to Technical Description T 140 358, Sec. 4.5.1.2. The settings always apply to **both** sensing tubes **together**.

System limit table for planning without "ADW HeatCalc" calculation

Switch position: *C > A1 to T3 > M* ① / ② / ③ Standard/ guideline	*C >*		Switch position (additional), *W04* to *W09* Not standards compliant for EN 54-22 ④	Application ⑤	Diff alarm			Max alarm	AI delay	Length of the sensing tube supply line (ADW to monit. area) ⑦	Max. length of sensing tube (ADW to tube end) ③ / ⑥
					Diff alarm threshold ⑥	Alarm verification: Delta pressure ⑥	Alarm verification: Time	Max alarm-threshold ⑥			
					(mbar/min)	(mbar)	(s)	(mbar)	(s)	(Fig. 3 "A")	(Fig. 3 "B")
EN 54-22	*A1 >*	*TE*	*C > W01 – W03*	R	2.3	6.0	600	210.5	4	5 m	125 m
		ME			2.3	6.0	600	212.5	4		140 m
		TEE			2.3	6.0	600	230.8	4		125 m
	A2 >	*TE*	*C > W01 – W03*	R	2.3	8.0	600	210.5	4	5 m	125 m
		ME			2.3	8.0	600	222.1	4		140 m
		TEE			2.3	8.0	600	245.3	4		125 m
	A1– > ①	*TE*	*C > W01 – W03*	R	3.7	6.1	600	210.5	4	5 m	125 m
		ME			4.2	6.5	600	212.5	4		140 m
		TEE			3.7	6.1	600	230.8	4		125 m
	A2– > ①	*TE*	*C > W01 – W03*	R	3.7	8.6	600	210.5	4	5 m	125 m
		ME			4.2	8.7	600	222.1	4		140 m
		TEE			3.7	8.6	600	245.3	4		125 m
	b >	*TE*	*C > W01 – W03*	E	2.3	8.0	600	260.4	4	5 m	125 m
		ME			2.3	8.0	600	275.3	4		140 m
		TEE			2.3	8.0	600	295.3	4		125 m
	C > ②	*ME*	*C > W01 – W03*	E	2.3	8.0	600	329.4	4	5 m	140 m
	d > ②	*ME*	*C > W01 – W03*	E	2.3	8.0	600	383.4	4	5 m	140 m
	E > ②	*ME*	*C > W01 – W03*	E	2.3	8.0	600	436.6	4	5 m	140 m
	F > ②	*ME*	*C > W01 – W03*	E	2.3	8.0	600	490.7	4	5 m	140 m
	G > ②	*ME*	*C > W01 – W03*	E	2.3	8.0	600	544.7	4	5 m	140 m

Notice about the table:

① Switch positions ***A1–*** and ***A2–*** are oriented to Classes A1l and A2l for space surveillance compliant with EN 54-22 but have no detection properties for test fire TF6 slow. If slowly developing fires are **not** to be taken into consideration in an application. These switch positions can be used **after consulting with the manufacturer**. **Caution**: These switch positions may **not be used for the comprehensive requirements of EN 54-22**.

② For response-class-related use of the ADW 535, the information in the Sec. "Programming" must be observed. In classes **CI** to **GI** the ART 535 external temperature sensor must always be used for temperature compensation. The **Teflon** sensing tube materials may not be used for classes **CI** to **GI** according to **EN 54-22** and classes **NI** and **NH** according to **NFPA 72**.

③ Programming sensing tube lengths **greater than 140 m** is possible only in switch positions ***No, NI, NH*** and ***T1***.

④ Switch positions ***W04*** to ***W09*** may be used only after consulting with the manufacturer. The configured values they contain concerning sensing tube monitoring are **not** tested **in accordance with EN**.

⑤ **R = space surveillance** = acc. to **EN 54-22 ➔ 10 m** heat impingement.
E = equipment monitoring = acc. to **EN 54-22 ➔** heat impingement of the **entire length** in the monitored area (crucial only for the Max alarm).
N = space surveillance = acc. to **NFPA 72 ➔ 30 ft** (9.1 m) heat impingement.
T = tunnel surveillance = acc. to **RVS/KFI ➔** heat impingement of a partial length, dependent on the airflow in the object.

⑥ The values for **Diff alarm**. **Max alarm** and **delta pressure** specified in the table above are only valid if the sensor tube is designed with the specified maximum length. With the programming of the project-specific length of the sensing tube in the setting procedure (***Easy-Config*** submenu ***L01*** / ***L02*** > ***015*** to ***200*** in the concerned switch position ***C***) the values are converted accordingly and configured in the ADW.

⑦ The length of the **sensing tube supply line** must be observed as specified above. Deviations of ± 10% are permitted.

⑧ For the sensing tube material **Teflon Ex** there is **no approval** according to **NFPA 72 / UL / FM / RVS / KFI.**

➔➔

Continuation:

Switch position: *C > A1* to *T3 > M* ① / ② / ③ Standard/ guideline	*C >*		Switch position (additional), *W04* to *W09* Not standards compliant for EN 54-22 ④	Application ⑤	Diff alarm			Max alarm	AI delay	Length of the sensing tube supply line (ADW to monit. area) ⑦	Max. length of sensing tube (ADW to tube end) ③ / ⑥
					Diff alarm threshold ⑥	Alarm-Verifikation: Delta pressure ⑥	Alarm-Verifikation: Time	Max alarm-threshold ⑥			
					(mbar/min)	(mbar)	(s)	(mbar)	(s)	(Fig. 3 "A")	(Fig. 3 "B")
NFPA 72	*No >*	*TE*	*C > W01 – W09*	N	3.8	3.4	300	254.8	4	5 m	150 m
		ME			3.9	2.6	300	267.6	4		200 m
		TEE ⑧			3.8	3.4	300	254.8	4		150 m
	NI > ②	*ME*	*C > W01 – W09*	N	5.4	3.2	300	362.1	4	5 m	200 m
	NH > ②	*ME*	*C > W01 – W09*	N	6.8	3.9	300	510.5	4	5 m	200 m
RVS	*T1 >*	*TE*	*C > W01 – W09*	T	3.0	2.0	600	211.9	4	5 m	150 m
		ME			3.0	2.0	600	214.7	4		200 m
		TEE ⑧			3.0	2.0	600	211.9	4		150 m
KFI	*T2 >*	*TE*	*C > W01 – W09*	T	7.1	1.4	600	208.9	4	5 m	105 m
		ME			8.7	1.7	600	210.9	4		115 m
		TEE ⑧			7.1	1.4	600	208.9	4		105 m
KFI (Lab)	*T3 >*	*TE*	*C > W01 – W09*	--	2.3	1.2	600	214.9	3	0 m	105 m
		ME			2.6	1.3	600	216.3	3		115 m
		TEE ⑧			2.3	1.2	600	214.9	3		105 m

Notice about the table:

① Switch positions ***A1–*** and ***A2–*** are oriented to Classes A1l and A2l for space surveillance compliant with EN 54-22 but have no detection properties for test fire TF6 slow. If slowly developing fires are **not** to be taken into consideration in an application. These switch positions can be used **after consulting with the manufacturer**. **Caution**: These switch positions may **not be used for the comprehensive requirements of EN 54-22**.

② For response-class-related use of the ADW 535, the information in the Sec. "Programming" must be observed. In classes **CI** to **GI** the ART 535 external temperature sensor must always be used for temperature compensation. The **Teflon** sensing tube materials may not be used for classes **CI** to **GI** according to **EN 54-22** and classes **NI** and **NH** according to **NFPA 72**.

③ Programming sensing tube lengths **greater than 140 m** is possible only in switch positions ***No, NI, NH*** and ***T1***.

④ Switch positions ***W04*** to ***W09*** may be used only after consulting with the manufacturer. The configured values they contain concerning sensing tube monitoring are **not** tested **in accordance with EN**.

⑤ **R = space surveillance** = acc. to **EN 54-22 ➔ 10 m** heat impingement.
E = equipment monitoring = acc. to **EN 54-22 ➔** heat impingement of the **entire length** in the monitored area (crucial only for the Max alarm).
N = space surveillance = acc. to **NFPA 72 ➔ 30 ft** (9.1 m) heat impingement.
T = tunnel surveillance = acc. to **RVS/KFI ➔** heat impingement of a partial length, dependent on the airflow in the object.

⑥ The values for **Diff alarm**. **Max alarm** and **delta pressure** specified in the table above are only valid if the sensor tube is designed with the specified maximum length. With the programming of the project-specific length of the sensing tube in the setting procedure (***Easy-Config*** submenu ***L01*** / ***L02*** > ***015*** to ***200*** in the concerned switch position ***C***) the values are converted accordingly and configured in the ADW.

⑦ The length of the **sensing tube supply line** must be observed as specified above. Deviations of ± 10% are permitted.

⑧ For the sensing tube material **Teflon Ex** there is **no approval** according to **NFPA 72 / UL / FM / RVS / KFI.**

Configuration options, Table A

The following criteria can be set for each sensing tube. Also, the criteria for day/night control can be separately set. Configuration changes are saved on one of the freely programmable switch positions ***X01*** to ***X03*** using "**ADW Config**".

Sector • Parameter	**Default setting**	**Area**	**Resolution / levels**	**Saving after change**
Sensing tube parameters (length / outer diameter)				
• Sensing tube supply line "**A**" (see also **Fig. 3**)	5 m	0 – 20 m	1 m	***X01*** – ***X03***
• Sensing tube supply line, inner diameter	3 mm	3 – 4 mm	1 mm	***X01*** – ***X03***
• Monitored area "**C**" (see also **Fig. 3**)	110 m	10 (> "**A**") – 200 m	1 m	***X01*** – ***X03***
• Monitored area, inner diameter	4 mm	---	---	***X01*** – ***X03***
Alarm (EN 54-22 / NFPA 72 / RVS / KFI)				
• ① Diff alarm status (On/Off)	On	On / Off ②		***X01*** – ***X03***
• ① Diff alarm threshold (dependent on sensing tube material and sensing tube length and the response grade acc. to EN 54-22 / NFPA 72 / RVS / KFI)	***A1 > TE***	0.5 to 250 mbar/min.	0.1 mbar/min.	***X01*** – ***X03***
• ① Diff alarm verification status (On/Off)	On	On / Off		***X01*** – ***X03***
• ① Diff alarm verification delta pressure value	***A1 > TE***	1 – 100 mbar	0.1 mbar	***X01*** – ***X03***
• ① Diff alarm verification time	600 s	60 s – 1,200 s	1 s	***X01*** – ***X03***
• ① Diff alarm delay	4 s	0 s – 30 s	1 s	***X01*** – ***X03***
• Diff alarm latching	On	On / Off		***X01*** – ***X03***
• ① Max. alarm status (On/Off)	On	On / Off ②		***X01*** – ***X03***
• ① Max. alarm threshold (dependent on sensing tube material and sensing tube length and the response grade acc. to EN 54-22 / NFPA 72 / RVS / KFI)	***A1 > TE***	1 – 1,200mbar	0.1 mbar	***X01*** – ***X03***
• ① Max. alarm delay	4 s	0 s – 30 s	1 s	***X01*** – ***X03***
• Max. alarm latching	On	On / Off		***X01*** – ***X03***
• ① Adjustment (compensation), On / Off	On	On / Off		***X01*** – ***X03***
• Adjustment (compensation), temp.sensor selection	Intern	Int. / Ext. I / Ext. II		***X01*** – ***X03***
• Adjustment (compensation), interval	60 min	1 – 1.440 min	1 min	***X01*** – ***X03***
• Alarm ext. temp.sensor	Off	55 – 300°C	1°C	***X01*** – ***X03***
• Alarm ext. temp.sensor, delay	2 s	0 s – 30 s	1 s	***X01*** – ***X03***
• Alarm ext. temp.sensor, latching	On	On / Off		***X01*** – ***X03***
Pre-signal				
• Pre-signal Diff alarm On/Off	On	On / Off		***X01*** – ***X03***
• Pre-signal Max alarm On/Off	On	On / Off		***X01*** – ***X03***
• Pre-signal Diff alarm (100% = alarm threshold)	70%	5 – 95%	5%	***X01*** – ***X03***
• Pre-signal Max alarm (100% = alarm threshold)	70%	5 – 95%	5%	***X01*** – ***X03***
• Pre-signal delay (Diff and Max)	4 s	0 s – 30 s	1 s	***X01*** – ***X03***
• Pre-signal latching (Diff and Max)	Off	On / Off		***X01*** – ***X03***
Sensing tube monitoring / check				
• ① Sensing tube monitoring EN 54-22 On/Off	On	On / Off		***X01*** – ***X03***
• Sensing tube monitoring cyclic On/Off	On	On / Off		***X01*** – ***X03***
• Check through monitoring (EN) / cyclic ③	Monit. + cycl.	Monit. + cycl.		***X01*** – ***X03***
• Check interval	24 h	1 – 48 h	1 h	***X01*** – ***X03***
• Check sensitivity	Medium	Low / Medium / High	3	***X01*** – ***X03***
• Check repetition rate ③	2 ③	1 – 4	1	***X01*** – ***X03***
• Check waiting time ③	30 min ③	1 – 60 min	1 min	***X01*** – ***X03***

① **Changes** to these parameters have an effect on the response characteristics of the ADW 535 and can mean that the requirements **according to EN 54-22** / **NFPA 72** / **RVS** / **KFI are no longer met**. Any adjustments or modifications to the ADW 535 via "ADW Config" may be performed only by the manufacturer or by qualified personnel instructed and trained by the manufacturer.

② Diff alarm status "Off" / Max alarm status "Off"; both criteria cannot be switched off at the same time.

③ Valid for ***C*** > ***A1*** to ***G*** and ***W00*** to ***W03***. Increased values are configured for switch positions ***W04*** to ***W09***; these are **not** tested for EN 54-22 compliance (see Technical description T 140 358, Sec. 4.5.1.2).

Configuration options, Table B

The following criteria apply to the entire ADW 535. Saving a configuration after changes is performed in conjunction with the adaptations in Table A on one of the freely programmable switch positions ***X01*** to ***X03***.

Sector • Parameter	**Default setting**	**Area**	**Resolution / levels**	**Saving after change**
Day/night control / weekday control				
• ① Day/night control On/Off	Off	Off / clock / FACP		***X01*** – ***X03***
• Day start time	06:00	00:00 – 24:00	1 min	***X01*** – ***X03***
• Night start time	20:00	00:00 – 24:00	1 min	***X01*** – ***X03***
• Weekday control	On	Mon. to Sun.	Days	***X01*** – ***X03***
General faults				
• Lithium battery / clock fault	On	On / Off		***X01*** – ***X03***
Deactivate / switch off sensing tube				
• ① Sensing tube I / sensing tube II switch off (partial planning) sensing tube II only	On	On / deactivated / switched off (partial planning)		***X01*** – ***X03***

① See notice to **Table A**

Configuration options, Table C

Independent configurations. These can be changed regardless of the switch position in the ADW 535.

Sector • Parameter	**Default adjustment**	**Selection**
Clock		
• Year, month, day, hour, minute, second	---	Seconds – year
Relay / OC output / reset key / various		
• Relay 1, 1st RIM 36	Diff alarm of sensing tube I	According to "***Configuration options relay allocation***"
• Relay 2, 1st RIM 36	Max alarm of sensing tube I	
• Relay 3, 1st RIM 36	Diff alarm pre-signal of sensing tube I	
• Relay 4, 1st RIM 36	Max alarm pre-signal of sensing tube I	
• Relay 5, 1st RIM 36	Alarm temperature sensor LMB	
• Relay 1, 2nd RIM 36	Diff alarm of sensing tube II	
• Relay 2, 2nd RIM 36	Max alarm of sensing tube II	
• Relay 3, 2nd RIM 36	Diff alarm pre-signal of sensing tube II	
• Relay 4, 2nd RIM 36	Max alarm pre-signal of sensing tube II	
• Relay 5, 2nd RIM 36	Freely programmable	
• Logging interval of SD memory card	1 s	1 – 120 s
• Perform initial reset, sensing tube I	---	On / Off
• Perform initial reset, sensing tube II	---	On / Off
• Manually initiate check, sensing tube I	---	On / Off
• Manually initiate check, sensing tube II	---	On / Off
• Isolate sensing tube (sensing tube I / II)	Normal operation	Isolate / normal operation

Relay assignment configuration options

The following criteria are freely programmable on max. 10 relays (5 units on 1st RIM 36, 5 units on 2nd RIM 36):

Sensing tube I	**Sensing tube II**	**General**
Diff alarm, sensing tube I	Diff alarm, sensing tube II	Alarm temperature sensor LMB
Max alarm, sensing tube I	Max alarm, sensing tube II	Undervoltage fault
Diff alarm pre-signal, sensing tube I	Diff alarm pre-signal, sensing tube II	Clock fault
Max alarm pre-signal, sensing tube I	Max alarm pre-signal, sensing tube II	
Pressure sensor I fault	Pressure sensor II fault	
Check unit I fault	Check unit II fault	
Fault ext. temperature sensor I	Fault ext. temperature sensor II	
Alarm ext. temperature sensor I	Alarm ext. temperature sensor II	

The criteria can also be allocated with the "OR" function (example: sensing tube I interruption or sensing tube II interruption together on one relay).

Commissioning

When commissioning the ADW 535, it is necessary to perform an initial reset in order to acquire basic data (e.g. pressure check dependent on the connected sensing tube volume). A sealing check of the connected sensing tube is also carried out during the initial reset. The initial reset must take place when the **ADW housing is open**.

If the ADW 535 is operated without the "ADW HeatCalc" calculation, commissioning with the "**EasyConfig**" **procedure** can be carried out directly on the ADW 535.

For projects in which the "ADW HeatCalc" calculation software was used or in which customer-specific adaptations have to be made in the device configuration, the "**ADW Config**" configuration software has to be used.

Starting up

Before the ADW 535 is switched on, it is absolutely necessary that all of the required measures have been performed (see T 140 358, Sec. 7.1).

- Sensing tube correctly mounted, cleaned (blown out) and only then connected to the ADW
- Isolation strips on the Lithium battery (LMB 35) removed

Startup sequence and procedure:

1. Switch on voltage supply (FACP), step motor goes into starting position, pressure pump is completely wound.
2. "**EasyConfig**": Select required switch position for operation according to "***System limit table***" (e.g. "***C*** > ***A2*** > ***ME*** > ***L01*** > ***085*** > ***L02*** > ***095***") ➔ see "***Re-programming***".
   - or:
   "**ADW Config**": after making adjustments to the configuration (alarm thresholds, set values according to "ADW HeatCalc", other criteria according to Tables A and B) select switch position "***X01***", "***X02***" or "***X03***".
3. Set date and time via LMB 35 with "EasyConfig" or from "ADW Config" (adoption by PC).
4. Following a **minimum waiting time of 5 min** after switching on, an initial reset must be performed. ➔ (See "***Initial reset***". **Important**: The initial reset must always be performed under the system's "normal conditions", i.e. if possible, under the normal operating temperature of the sensing tube.
5. The ADW 535 is now ready for operation.

Measurements / commissioning protocol

Carry out the following measurements (after "***Re-programming***" and "***Initial reset***"):

- Operating voltage on terminals 1 (+), 2 (–) (if redundant supply then also terminals 3 & 4) ➔ target value = 10.8 to 13.8 VDC (in 12 VDC operation) or 21.6 to 27.6 VDC (in 24 VDC operation).
- Configuration and pressure values in switch positions ***N*** and ***P*** (see Technical Description T 140 358, Sec. 7.6.1).

The commissioning protocol is like a personal history of the ADW 535 and should therefore be filled out conscientiously and completely and stored in the ADW 535. If required, a copy can be made and stored in the system dossier.

Re-programming

Example: ADW 535-2 (2 copper sensing tubes) compliant with EN 54-22, Class **A2l**. Sensing tube **I = 85 m**, sensing tube **II = 95 m**. Required switch position ***C*** > ***A2*** > ***L01*** > ***085*** > ***L02*** > ***095***.

Measure	Display	Procedure / remarks
1. Press **UP** key	Flashing ***A1*** > ***TE*** > ***W00*** > ***L01*** > ***125*** > ***L02*** > ***125***	• Displays the Default setting
2. Press **UP** key until ***C***	In succession ***A1*** / ***C***	• Displays switch position group ***C***
3. Press **OK** key	***A1***	• Displays Class ***A1*** in group ***C***
4. Press **UP** key until ***A2***	In succession ***A1*** / ***A2*** / ***b*** / ***C*** / etc.	• Displays Class ***A2*** in group ***C***
5. Press **OK** key	***M***	• Material selection ***M*** displayed in class selection ***A2***
6. Press **OK** key	***TE***	• Material selection display ***TE*** (Teflon)
7. Press **UP** key until ***ME*** (metal)	possible selection ***TE*** / ***ME*** / ***TEE***	• New material selection ***ME*** (metal)
8. Press **OK** key	***ME***	• Material selection display ***ME*** (metal)
9. Press **OK** key	***L01***	• Displays length entry **sensing tube I**
10. Press **OK** key	***125***	• Displays the maximum sensing tube length (default Teflon) = **125 m**
11. Press **UP** key until ***085*** (= 85 m)	Stepwise, ***015*** / ***020*** / ***025*** to ***085***	• Displays length in 5 m steps
12. Press **OK** key	***L02***	• Displays length entry **sensing tube II**
13. Press **OK** key	***125***	• Displays the maximum sensing tube length (default Teflon) = **125 m**
14. Press **UP** key until ***095*** (= 95 m)	Stepwise, ***015*** / ***020*** / ***025*** to ***095***	• Displays length in 5 m steps
15. Press **OK** key	Flashing **- - -** (approx. 4 x)	• New setting is programmed
16. Check: Press **UP** key	Flashing ***A2*** > ***ME*** > ***W00*** > ***L01*** > ***085*** > ***L02*** > ***095***	• Displays the new setting

Initial reset

Switch position ***U01*** = initial reset for sensing tube I
Switch position ***U02*** = initial reset for sensing tube II

Measure	Display	Procedure / remarks
1. Press **UP** key	Flashing ***A2*** > ***ME*** > ***W00*** > ***L01*** > ***085*** > ***L02*** > ***095***	• System-specific setting
2. Press **UP** key until ***U***	In succession ***A2*** / ***C*** / to ***U***	• Displays switch setting group ***U***
3. Press **OK** key	***U01***	• Displays initial reset On for **sensing tube I**
4. Press **UP** key until ***U01***	Stepwise, ***U01*** / ***U02***	• Selection ***U01***, initial reset for **sensing tube I**
5. Press **OK** key	Static ***U***, Flashing ***01***	• Pressure pump is fully wound
6. Vent sensing tube for **60 s**	Static ***U***, Flashing ***01***	• Pressure equalisation at “0”
7. Press **OK** key ➔ **Wait**	Flashing ***U01*** (automatic sequence, **approx. 2 min**)	• Test pressure • Length check • Pressure build-up • Sealing check
	Flashing ***- - -*** ①	• Initial reset completed

① The display ***- - -*** signals only the completed initial reset process. Depending on the result, there may be an initial reset fault.

Following the sequence above, the initial reset must be carried out separately for each individually selected sensing tube.

Checking fault and alarm release

Block or switch off fire incident control and remote alerting on the superordinate FACP.

To check the fault and alarm release, **test triggerings** must be carried out in switch position ***I***. Observe the information in Technical Description T 140 358, Sec. 7.7.1.

Testing the effective “heat” characteristic is usually not necessary. If required, it is possible to generate the necessary heat (similar to an actual fire) with test devices to simulate the response of the ADW 535 (see Technical Description T 140 358, Sec. 5.4.2.4).

Article numbers and spare parts

Short designation		Article number
ADW 535-1		11-1000000-01-XX
ADW 535-2		11-1000000-02-XX
ADW 535-1HDx (T 140 458 / T 140 459)		11-1000001-01-XX
ADW 535-2HDx (T 140 458 / T 140 459)		11-1000001-02-XX
XLM 35 SecuriLine eXtended line module ①		11-2200003-01-XX
M-Line module ML-SFD		11-2200015-01-XX
RIM 36 Relay Interface Module		11-2200005-01-XX
SIM 35 Serial Interface Board		11-2200000-01-XX
SMM 535 Serial Master Module		11-2200001-01-XX
ART 535-10 ext. temp. sensor		11-1000002-10-XX
ART 535-10 400 ext. temp. sensor		11-1300059-01-XX
ART 535-30 400 EX 1 ext. temp. sensor		11-1300062-01-XX
ART 535-30 400 EX 21 ext. temp. sensor		11-1300063-01-XX
ART 535-30 60 EX 1 ext. temp. sensor		11-1300060-01-XX
ART 535-30 60 EX 21 ext. temp. sensor		11-1300061-01-XX
Ethernet cable 3.0 m		30-6800006-02-XX
SD memory card (industrial version)		11-4000007-01-XX
LMB 35 main board (for ADW 535-1 / -2)		11-1200001-01-XX
LEB 35 extension board (for ADW 535-2)		11-1200002-01-XX
LSU 35 complete supervising unit		11-1200003-01-XX
Lithium battery BR 2032		11-4000008-01-XX
Cable screw union	M20 (set of 10)	11-4000003-01-XX
	M25 (set of 10)	11-4000004-01-XX
Adapter US cable screw union AD US M-inch		11-2300029-01-XX
UMS 35 Universal Module Support		4301252.0101
Technical description	ADW 535	T 140 358
	ADW 535HDx (ATEX)	T 140 458
Operating Instructions ADW 535HDx (ATEX)		T 140 459
Mounting and installation		T 140 360
Material for sensing tube		T 140 362
Commissioning protocol		T 140 363
Data sheets	XLM 35	T 140 088
	ML-SFD	T 140 822
	RIM 36	T 140 364

① not tested to UL/ULC

ADW 535-2 (-1) dimensioned drawing

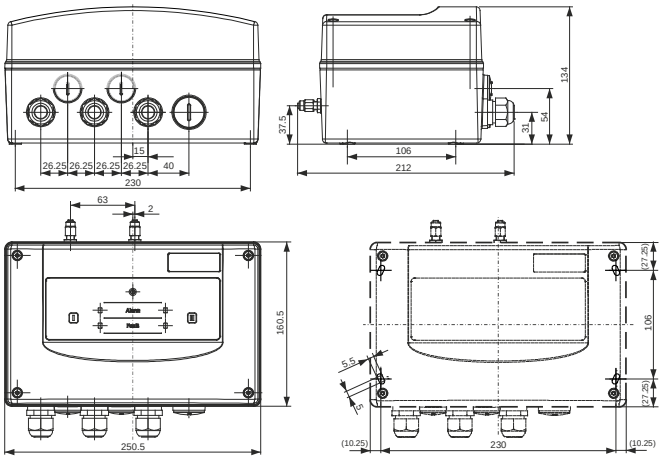

Fig. 4 Dimensioned drawing, drilling plan for evaluation unit

Technical data

Type				ADV 535	
Voltage supply range				9 to 30 (**UL/FM = 10.6 to 27**)	VDC
Maximum power consumption, measured at ➔		in 12 VDC operation 9 VDC ①	in 24 VDC operation 18 VDC ①	typical 24 VDC	
ADW 535-1	Quiescent/fault	approx. 75	approx. 45	approx. 35	mA
	Alarm I	approx. 90	approx. 52	approx. 42	mA
	Check	approx. 660	approx. 270	approx. 210	mA
	Heated below –20 °C	approx. 775	approx. 360	approx. 275	mA
ADW 535-2	Quiescent/fault	approx. 95	approx. 53	approx. 43	mA
	Alarm I + II	approx. 125	approx. 71	approx. 57	mA
	Check	approx. 660	approx. 290	approx. 230	mA
	Heated below –20 °C	approx. 775	approx. 375	approx. 290	mA
additionally with 1 RIM 36 (all relays triggered)		approx. 48	approx. 23	approx. 15	mA
additionally with 2 RIM 36 (all relays triggered)		approx. 96	approx. 46	approx. 30	mA
additionally with XLM 35 / ML-SFD (not tested to UL/ULC)		approx. 20	approx. 10	approx. 5	mA
additionally with SIM 35		approx. 20	approx. 10	approx. 5	mA
SMM 535 (not from ADW but rather from PC via USB connection)				max. 100	mA
Switch-on current peak ② (caused by EMC protection elements on the ADW supply input)				approx. 5	A
				for max. 1	ms
Sensing tube length				see T 140 358, Sec. 4.5	
Sensing tube diameter, copper (Cu), steel (St) (outer / inner)				Ø 5 / 4	mm
Sensing tube diameter, PTFE (outer / inner)				Ø 6 / 4	mm
Response range			EN 54-22, classes A1I – GI / UL/ULC, acc. to cl. A1I – GI NFPA 72, classes Ordinary, Intermediate, High / RVS / KFI		
Protection type in accordance with IEC 60529 / EN 60529 (1991)				65	IP
Ambient conditions in accordance with IEC 60721-3-3 / EN 60721-3-3 (1995)				3K5 / 3Z1	class
Environmental group acc. EN 54-22				III	group
Extended ambient conditions:					
• Temperature range evaluation unit				–30 – +70	°C
• Sensing tube temperature range			–40 – +300 (Teflon = –40 – +85) ③		°C
• Max. permissible storage temperature for evaluation unit (without condensation)				–30 – +70	°C
• Humidity ambient condition of evaluation unit (continuous, IP65)				95	% rel. humidity
• Humidity ambient condition of sensing tube (continuous)				70	% rel. humidity
Max. loading capacity, relay contact				50 (**UL max. 30**)	VDC
				1	A
				30	W
Max. loading capacity per OC output (dielectric strength 30 VDC)				100	mA
Plug-in terminals				2.5	mm²
Cable entry for cable Ø				Ø 5 – 12 (M20) / Ø 9 – 18 (M25)	mm
Protection sleeve ART 535-x				stainless steel V4A 1.4571	
Housing	material			ABS blend, UL 94-V0	
	colour			grey 280 70 05 / anthracite violet 300 20 05	RAL
Approvals			EN 54-22 / FM 3210 / UL 521 / ULC-S530-M91 / RVS / KFI		
VdS approval				G 214076	
Dimensions ADW 535-1 / -2 (W x H x D)				250 x 212 x 134	mm
Weight	ADW 535-1			1.500	g
	ADW 535-2			1.970	g

① Power consumption at maximum permitted voltage drop in the electrical installation (decisive value for calculating the conductor cross-section).

② May cause the protective circuit to trigger immediately in the case of power supplies with overload protective circuits (primarily in devices with no emergency power supply and output current of < 1.5 A).

③ Higher temperature ranges are also possible based on sensing tube material after consultation with the manufacturer. When using the sensing tube at 100°C and above, use metal pipe clamps.

Changes index “f” on all pages

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SECURITON
For your safety

Robust linear heat detector for demanding applications.

SecuriHeat ADW

ADW line type heat detector: Built for tough conditions

Transformers

Oil-filled transformers pose a significant fire hazard. In the event of a sudden increase in heat, the ADW system detects the danger and triggers an alarm at lightning speed – regardless of whether the system is located in a building or outdoors, or in a remote location or city centre.

Food industry

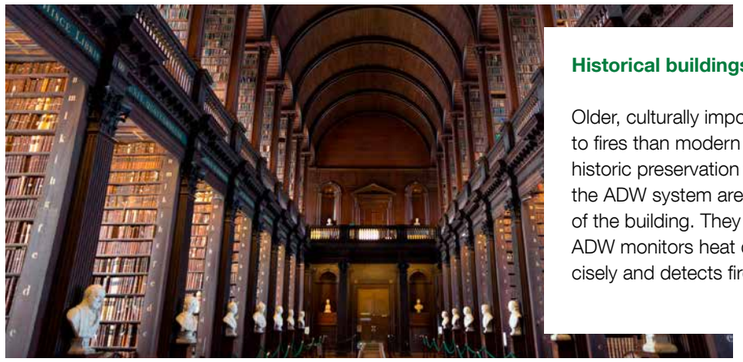
Due to hygiene regulations, surfaces used in food production have to be jet-cleaned at high pressures or cleaned with aggressive or corrosive chemicals. As a result, conventional heat or fire detectors may then experience limited functionality. This is not the case when using ADW. Its sealed sensing tubes made from food-safe steel can be cleaned at the same time without any problems, while the control unit can also be positioned outside the production area.

Car parks

Car parts can overheat, leading to major damages in combination with highly flammable fuel. However, electric cars are also not free from danger – their rapid increase in popularity also poses problems for car park operators when it comes to minimising the risk of fire. ADW offers robust, reliable and cost-effective protection against all types of fire.

Danger zones

Oxygen, fuel and heat are a particularly potent mixture. Due to the risk of explosions, fire detection systems have to be sensitive enough to trigger an alarm in good time, yet also robust enough to survive in harsh surroundings. ADW and its metal pipes are the perfect solution here. Furthermore, with the exception of the robust ATEX models, the active electrical system components are mounted outside the classified danger zone.



Historical buildings

Older, culturally important buildings are often more susceptible to fires than modern buildings. ADW brings fire protection and historic preservation together in perfect harmony. The pipes on the ADW system are inconspicuous and maintain the character of the building. They can be retrofitted easily in tight spaces. ADW monitors heat development across the entire building precisely and detects fires before they are able to spread.

Dirty and harsh environments

SecuriHeat ADW works reliably in places where other systems are unable to cope with difficult ambient conditions. The line type heat detector is insensitive to dirt and dust, is resistant to corrosive chemicals and is the ideal solution for outdoor use in all weather conditions. The system can even send warnings about unusual heat developments when the pipes are encased in material.

PRODUCT RANGE

System overview:
The right model for every risk profile

ADW 535-1, 1 channel

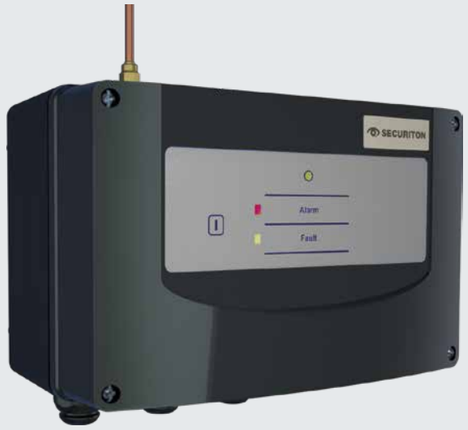
ADW 535-2, 2 channel

ADW 535
For sophisticated applications

- Immune to contaminants such as dust, dirt, etc.
- Optimal response behaviour with differential and maximum evaluation
- Applications: transformers, abattoirs, multi-storey car parks, food industry, loading ramps
- Approvals: VdS, UL, FM, ActivFire, KFI, SIL
- Total length of sensing tube: 2 × 200 m
- Protection type: IP 65
- Temperature range: Evaluation unit: –30 °C to +70 °C
  Sensing tube: –40 °C to +300 °C

The benefits to you

- Simple: a detector for many different applications
- Reliable in extreme conditions:
  thanks to robust design and high IP protection
- No limits: reliable monitoring even in high-temperature conditions where other detectors reach their limits
- Extended monitoring area: with two independent channels up to 2 x 200 m



ADW 535-1 HDx, 1 channel

ADW 535-2 HDx, 2 channel

ADW 535 HDx
For heavy-duty and ATEX applications

- Applications: paint shops, chemical industry, fuel depots and outdoor applications
- ATEX zones: zones 2 and 22
- Approvals: VdS, UL, FM, ActivFire, KFI, SIL, ATEX
- Total length of sensing tube: 2 × 200 m
- Protection type: IP 66
- Temperature range: Evaluation unit: –30 °C to +70 °C
  Sensing tube: –40 °C to +300 °C

ADW 535-1 ATEX, 1 channel

ADW 535 ATEX
For ATEX applications

- ATEX zones: zone 1
- Response behaviour: differential and maximum evaluation
- Applications: chemical industry, fuel depots, chemical depots
- Approvals: VdS, ATEX
- Protection type: IP 65
- Temperature range: Evaluation unit: –20 °C to +40 °C
  Sensing tube: –40 °C to +300 °C

Maximum reliability: With double evaluation

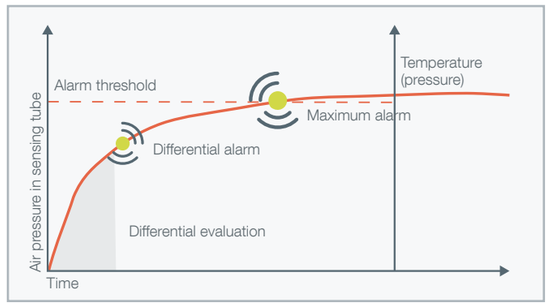
Detection with maximum and differential evaluation

Detection with maximum and differential evaluation

One detector, two detection options: With maximum and differential evaluation available in every application, the ADW system family boasts optimal response behaviour. With maximum evaluation, ADW triggers an alarm as soon as a pre-configured temperature threshold has been reached. This ensures that there are no excessive temperatures in the monitored object. Additionally, ADW also monitors the temperature with differential evaluation. In this case, ADW reliably triggers an alarm as soon as a rapid increase in temperature is detected – as is typical in the event of fire.

The operating principle: detecting fires using air pressure

The integrating SecuriHeat ADW line type heat detector combines a proven operating principle with the latest developments in sensor technology. A sensing tube filled with regular air is installed in the monitored area. A fully electronic pressure sensor permanently monitors the pressure in the sensing tube. The air pressure values are constantly monitored by the evaluation electronics and compared with the alarm criteria. Dynamic Heat Watch technology (DHW) also protects against false alarms resulting from brief increases in temperature caused by normal ambient conditions.



Alarm thresholds

Operating principle of ADW 535

Norms and ranges SecuriHeat ADW

EN 54-22

Response grades

A1I–GI

With SecuriHeat ADW, you can carry out projects according to all response grades (54 to 160 °C). ADW can be used in all surroundings, from indoor applications to outdoor applications in challenging conditions.

NFPA 72

Temperature classes

58 – 162 °C
135 – 324 °F

An ADW system installed according to NFPA 72 can be planned in line with the “Ordinary”, “Intermediate” or “High” classes.

The planning is supported by spacings of between 15 ft and 40 ft.

Sensing tube

2 × 200 m

Large monitoring area with two independent detection channels:
EN 54: metal max. 140 m / Teflon max. 125 m
NFPA 72: max. 200 m

Robust

IP 65

The high IP class allows ADW to be used in humid and contaminated environments. Thanks to sensing tubes made of Teflon or metal, countless different applications are possible – including in high-temperature environments.

Planning:
Finished in record time

Securiton provides you with tools that make planning ADW systems a breeze.

Simple planning with ADW HeatCalc

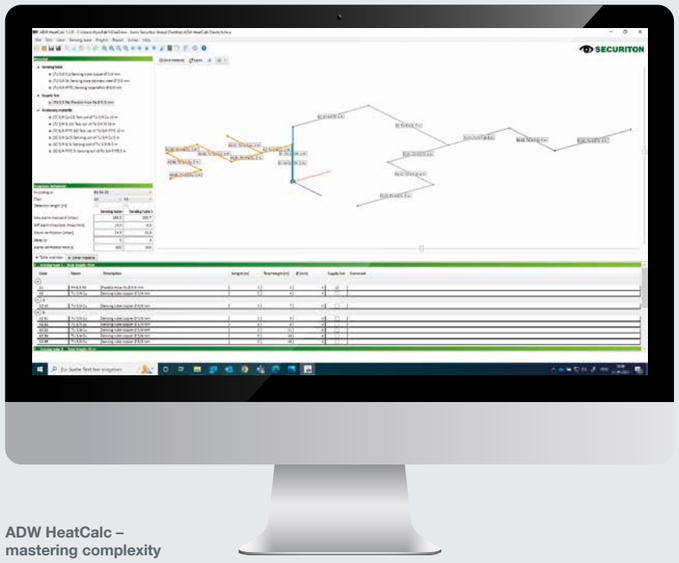
The ADW HeatCalc software from Securiton allows for security systems to be planned from a very early stage. With just a few clicks of your mouse, you sketch the pipe layout with the help of the program. The software ensures that your system meets all standards (EN 54-22, NFPA 72) and delivers the maximum benefit. ADW HeatCalc creates a comprehensive report for the system documentation. It includes the calculated device configuration and a part list for ordering the required components.

Efficient building planning with BIM

Securiton offers BIM models in Revit for its products – including SecuriHeat ADW. Planning is then more efficient: you can identify planning errors early on and BIM automatically calculates the system dimensions and costs. You can then benefit from savings in both planning costs and working hours.

The benefits to you

- Flexible planning for a variety of applications
- Easy planning allows for efficient procedures
- Simple material ordering thanks to complete material list
- Lower costs due to minimal outlay



ADW HeatCalc – mastering complexity

Configuration and commissioning:
The fast way to optimal settings

Use the practical ADW Config software tool for commissioning and application-specific tailoring directly on the device.

Configuration – directly on the device or via software

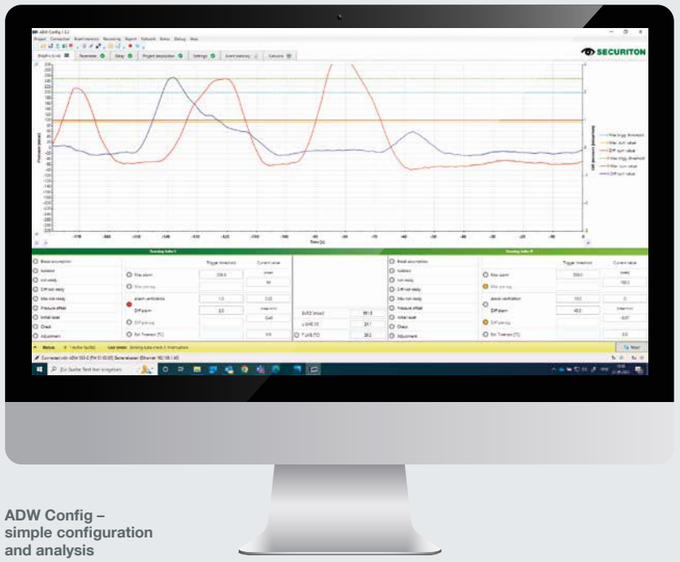
Simple systems are configured directly on the device without the use of a PC – EasyConfig takes you through the individual steps in a logical way. The practical ADW Config software tool is used for more complex systems and specific adaptations. Its comprehensive analysis functions and setting options ensure the safe, economical operation of the system. As a practical plus, the device configuration calculated by ADW HeatCalc can be saved as a file directly in the device via ADW Config.

Get away from complexity – with our ADW tools

- ADW Config software for complete device setting and analysis
- ADW HeatCalc software for efficient planning, VdS-approved
- BIM models for smart building planning
- Config over Line for central configuration, commissioning and maintenance without physical access to the device

The benefits to you

- Full access to the ADW system with ADW Config
- Fast commissioning
- Simple, cost-effective maintenance and analysis



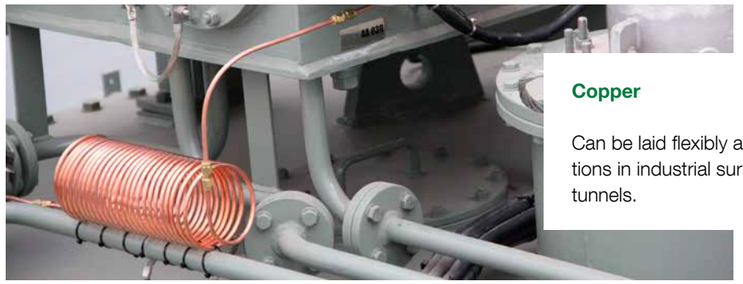
ADW Config – simple configuration and analysis

Sensing tube: Robust and versatile

ADW heat detectors can be used in a wide variety of applications. As a result, the sensing tubes have to be able to meet various requirements. Thanks to the different pipe materials, ADW offers the perfect solution for every application.

Teflon

Simple installation: available on rolls of up to 125 metres long, Teflon pipe is flexible and can be laid quickly and easily with few connection pieces – just like an electric cable. Applications: chemical industry, aggressive environments, multi-storey car parks, standard applications, resistant to many chemicals.



Copper

Can be laid flexibly and is available as rolls or pipes. For applications in industrial surroundings, loading ramps, transformers and tunnels.

Stainless steel

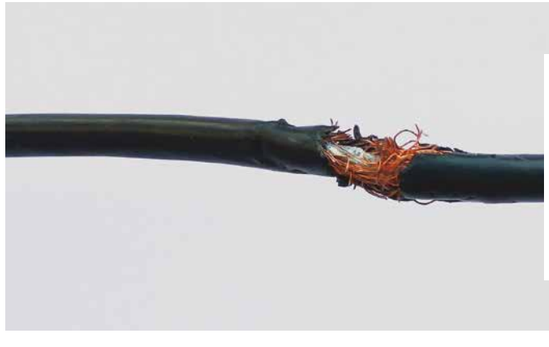
Stainless steel sensing tubes are available as pipes and can be laid flexibly. Applications: food industry, high temperatures, environments with strict hygiene standards that are cleaned with steam or aggressive agents.

The benefits to you

- Meets requirements: flexible material selection for different installations
- Simple mounting: wide range of accessories
- Broad application scope: thanks to different sensing tube materials
- Extremely robust: thanks to high IP protection
- Reliable detection: even in difficult environments

Demanding applications: Every situation under control

ADW not only offers the necessary protection in standard applications. It is also the perfect solution in difficult conditions. ADW comes into play wherever standard fire detection reaches its physical limits.



Rodent protection

Line type heat detectors are often exposed to attacks from rodents such as mice, martens or rats.
The ADW sensing tube (copper or steel) is completely resistant to such damage. The result is fewer fault messages, false alarms and repairs.

Lightning resistance

Electrical interference all the way up to lightning strikes can disturb or even completely interrupt the operation of exposed active system components. ADW is completely immune against electromagnetic interference. Full lightning protection is ensured by the earthing of the sensing tube. In practice, you then benefit from a virtually unlimited service life of the system.

Protection against explosions

With its metal sensing tube, the ADW 535 HDx model is the ideal choice for monitoring potentially explosive areas. The system offers reliable protection in distilleries, warehouses and any location where flammable materials are stored or handled.

Complete range of accessories: The right components for every application

Industrial applications
Accessories for harsh environments.

Copper range:

TU 5/4 Cu

TU 5/4 Cu 50

SC 5/4 Cu

SJ 5/4 CuZn

TJ 5/4 CuZn

Optional modules
Functional enhancement for line type heat detectors.

Relay cards

Interface cards

Data recording

Special applications
Food industry, high temperatures, for the demanding protection of premises.

Stainless steel range:

TU 5/4 St

SC 5/4 St

TJ 5/4 St

SJ 5/4 St

Standard applications
Securiton offers a comprehensive range of accessories for a complete installation.

Teflon range:

TU 6/4 PTFE

TU 6/4 PTFE/R

SC 6/4 PTFE

TJ 6/4 CuZn

SJ 6/4 CuZn

Accessories for Ex zones
For increased requirements in potentially explosive environments. Copper or stainless steel range also possible.

ATEX range:

TU 6/4 PTFE Ex

GC 5-6 Ex

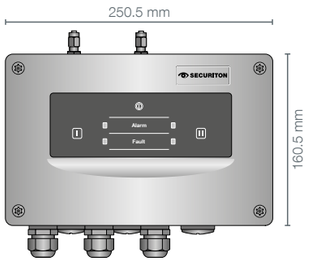
Globally successful: With universally accepted certifications

Global product tests and certifications give SecuriHeat ADW line type heat detectors universal market access and worldwide applications.

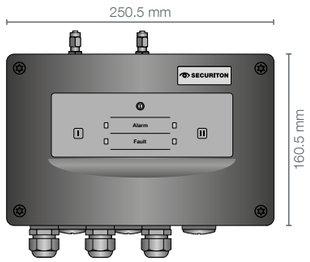
SecuriHeat ADW line type heat detectors speak many different languages: globally applicable standards such as NFPA 72, FIA Code of Practice, VDE 0833-2, TS 54-14, BS 5839-1, etc. can be met in all confidence when planning a system.

Securiton maintains a global presence. Our head office is in Switzerland, with subsidiaries or local employees in Mexico, Brazil, Spain, India, Malaysia, China, Colombia, Thailand and Dubai.

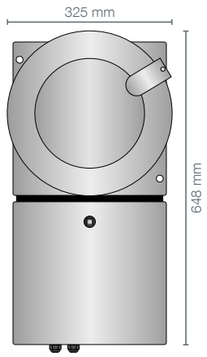
Overview of fire alarm control panels: SecuriHeat ADW



ADW 535 normal



ADW 535 HDx



ADW 535 ATEX

	ADW 535	ADW 535 HDx	ADW 535 ATEX
Product details			
Channels	1/2	1/2	1
Detection unit	Differential pressure sensor		
Operating principle	integrating line type heat detector		
Programming (PC tool)	ADW Config		
Configuration	EasyConfig		
Calculation software	ADW HeatCalc		
Applications	Vehicle storage halls, loading ramps, chemical industry, food industry, historical buildings	Additionally in ATEX zones, such as fuel depots and chemical systems	Additionally in ATEX zones, such as fuel depots and chemical systems
ATEX zones (evaluation unit)	N/A	Zones 2 and 22	Zone 1
Approvals	VdS, UL, FM, ActivFire, EAC, SIL	VdS, UL, FM, ActivFire, EAC, SIL, ATEX	VdS, ATEX
EN 54-22 norm	Metal: Classes A1I, A2I, BI, CI, DI, EI, FI, GI Teflon: A1I, A2I, B		
NFPA 72 / FM 3210 / UL 521	Metal: Ordinary, Intermediate, High Teflon: Ordinary	Metal: Ordinary, Intermediate, High Teflon: Ordinary	N/A

		ADW 535	ADW 535 HDx	ADW 535 ATEX
Product details				
Supply voltage range		EN 54: 9.0 – 30 VDC FM/UL: 10.6 – 27 VDC	EN 54: 9.0 – 30 VDC FM/UL: 10.6 – 27 VDC	EN 54: 9.0 – 30 VDC
Power consumption (24 VDC) 1-channel device	Normal operation Self-test	35 mA 210 mA (ca. 180 sec)	35 mA 210 mA (ca. 180 sec)	35 mA 210 mA (ca. 180 sec)
Power consumption (24 VDC) 2-channel device	Normal operation Self-test	43 mA 230 mA (ca. 180 sec)	43 mA 230 mA (ca. 180 sec)	
Sensing tube length per channel	EN 54-22 (metal/Teflon) NFPA 72 (metal/Teflon)	10–140 m / 10–125 m 10–200 m / 10–150 m	10–140 m / 10–125 m 10–200 m / 10–150 m	10–115 m / 10–105 m
Sensing tube monitoring		Yes	Yes	Yes
Relay contacts		2 (1 × alarm, 1 × fault)	4 (2 × alarm, 2 × fault)	2 (1 × alarm, 1 × fault)
Interfaces		Ethernet	Ethernet	Ethernet
Optional modules		2 × RIM 36, SIM 35, XLM 35		
Operating temperature/ humidity	Evaluation unit	–30 to +70 °C / 95% RH	–30 to +70 °C / 95% RH –20 to +70 °C / 95% RH (ATEX zone)	–20 to +40 °C / 95% RH
	Sensing tubes (depending on material)	Metal: –40 to +300 °C / 100% RH Teflon: –40 to +85 °C / 100% RH		
Housing	Protection type	65	66	65

SECURITON

Securiton AG

Alarm and Security Systems
Alpenstrasse 20, 3052 Zollikofen
www.securiton.ch, info@securiton.ch

A Swiss Securitas Group company

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SecuriHeat ADW 535

Product Catalogue 2026

1. Introduction

ADW line type heat detector: Built for tough conditions
Where conventional fire detectors reach their physical limits, the SecuriHeat ADW 535 line-type heat detector comes into play. This intelligent line-type heat detector offers high performance even under the most difficult conditions. It offers fully automatic monitoring of large areas while being resistant to corrosive gases, extreme humidity and high temperatures. A state-of-the-art line-type heat detector, the ADW 535 also has the ability to differentiate between false alarms and real danger.

Design and function
The integrated SecuriHeat ADW 535 line-type heat detector combines a proven functional principle with the latest developments in sensor and processor technology. A sensing tube filled with normal air is installed in the area to be monitored. A fully electronic pressure sensor permanently records the pressure in the sensing tube. This is monitored constantly in the processing electronics and compared with the alarm criteria. Diverse setting options are offered directly on the device via EasyConfig or using the comfortable ADW Config tool for perfect adaptation to change environmental conditions. Dynamic Heat Watch (DHW) technology ensures that a brief temperature increase caused by the ambient conditions does not result in a false alarm.

Applications
Thanks to its extremely tough sensing tube, the SecuriHeat ADW 535 can be deployed in many applications where conventional fire detectors cannot work. With its long service life and maintenance-free design, the ADW 535 is also ideal in applications where detection properties must remain constant over the entire product service life.

Typical applications:
- Tunnels: road tunnels, metro and railway tunnels, utility and cable tunnels
- Underground garages, vehicle silos
- Food industry, industrial kitchens, large commercial bakeries
- Alcohol processing, distilleries
- Chemical industry, refineries, oil tanks
- Waste incineration plants
- Outdoor applications: loading platforms (flying roofs), historical bridges, fuel warehouses, towers
- High-temperature applications such as: paint shops, steel plants, kilns, climate chambers, gas turbines, engine test benches
- And many other applications, e. g. underfloor monitoring in rolling stock, marine applications

Sensing tubes
Depending on the application, various sensing tubes are available (all of which have VdS approval):
- PTFE (Teflon): Standard material and for aggressive ambient conditions (e.g. chemical industry)
- Copper: standard applications, property surveillance
- Stainless steel: food industry and high temperature applications

3. Line type heat detector

Line Type Heat detector

ADW 535-1

ADW 535-2

ADW 535-1	one sensing tube	**11-1000000-01-02**
ADW 535-2	two sensing tube	**11-1000000-02-02**

The SecuriHeat ADW 535 line-type heat detector combines a proven functional principle with the latest developments in sensor and processor technology.
A sensing tube filled with normal air is installed in the area to be monitored. A fully electronic pressure sensor permanently records the pressure in the sensing tube and compares it with the alarm criteria.
Commissioning and configuration are done either directly on the device or via the comfortable ADW Config software tool for a perfect adaptation to existing environmental conditions.
For planning the ADW HeatCalc software allows an optimized design of any installation.

Operating voltage:		9 to 30 VDC
Protection class:		IP65
Operating temperature:		-30°C to +70°C
Operating temperature sensing tube*:		please see page 11
Weight:	1 sensing tube	1,5 kg
	2 sensing tubes	1,97 kg
Dimensions (HxWxD):		160.5 x 250.5 x 134 mm
Color:		light grey (RAL 280 70 05) charcoal (RAL 300 20 05)

Approvals

VdS-Approval:	G 214076
UL-Approval:	S7197
FM-Approval:	3056227

Note:
*: Temperature range depends on the sensing tube material used.

Line Type Heat detector HDx

ADW 535-1HDx

ADW 535-2HDx

ADW 535-1HDx	One Sensing tube	**11-1000001-01-02**
ADW 535-2HDx	Two sensing tubes	**11-1000001-02-02**

The SecuriHeat ADW 535 line-type heat detector combines a proven functional principle with the latest developments in sensor and processor technology.
A sensing tube filled with normal air is installed in the area to be monitored. A fully electronic pressure sensor permanently records the pressure in the sensing tube and compares it with the alarm criteria.
Commissioning and configuration are done either directly on the device or via the comfortable ADW Config software tool for a perfect adaptation to existing environmental conditions.
For planning the ADW HeatCalc software allows an optimized design of any installation.

The HDx versions of the control unit are for installation inside Ex zones 2 and 22 and very harsh ambient conditions.

Operating voltage:		9 to 30 VDC
Protection class:		IP66
Operating temperature:		-30°C to +70°C
Operating temperature sensing tube:		please see page 11
Weight:	1 sensing tube	3,05 kg
	2 sensing tubes	3,42 kg
Dimensions (HxWxD):		160.5 x 250.5 x 134 mm
Color:		graphite black (RAL 9011) platinum grey (RAL 7036)

Approvals

VdS-Approval:	G 214076
ATEX-Approval:	II 3G Ex ec nC IIC T4 Gc II 3D Ex tc T130°C Dc
UL-Approval:	S7197
FM-Approval:	3056227

Note:

*: Temperature range depends on the sensing tube material used.

5. Accessories

	Copper tube	Stainless steel tube	Teflon tube	Flexible polyamide hose
Application areas	Standard environments	High temperature environments	Standard and aggressive environments	For the flexible connection between ADW and copper/stainless steel tube
Properties	Temperature resistance ++ Chemical resistance – – Corrosion resistance +	Temperature resistance +++ Chemical resistance – Corrosion resistance ++	Temperature resistance ++ Chemical resistance +++ Corrosion resistance +++	Temperature resistance + Chemical resistance ++ Corrosion resistance ++
Application areas	standard industrial applications Car park halls Loading platforms Road tunnels railway tunnels underground railway tunnels	Fertiliser industry Rubber industry Plastics processing industry Food processing industry Textile industry cellulose industry	Standard industrial applications Bioengineering Chemical industry Semiconductor industry Laboratory Engineering Medical engineering Pharmaceutical industry	As supply line to the detection area or for the thermal decoupling
Diameter outside (mm)	5	5	6	5
Diameter inside (mm)	4	4	4	3
Max. tube length **EN 54-22:** **NFPA 72:**	10 to 140 m 10 to 200 m	10 to 140 m 10 to 200 m	10 to 125 m 10 to 150 m	0 to 20 m
Max. distance between pipe clamps	0,8 m to 1,2 m	0,8 m to 1,2 m	0,5 m	0,5 m
Distance between pipe clamps and Screw-junction piece	≥ 10 cm each side	≥ 10 cm each side	≥ 20 cm each side	≥ 20 cm each side
Operating temperature	-40°C to +300°C	-40°C to +300°C (higher temperatures on demand)	-40°C to + 85°C	-40°C to +100°C
Applicable in heat classes **EN 54-22:** **NFPA 72:**	A1-G Ordinary, Intermediate, High	A1-G Ordinary, Intermediate, High	A1, A2 and B Ordinary	-
Material	Cu-DHP R250	Stainless steel (1.4571)	Polytetrafluorethylen (PTFE)	Polyamide PA 12
Screw junction piece	Brass	Stainless steel (1.4571)	PVDF or Brass	-
End plug	Brass	Stainless steel (1.4571)	PVDF or Brass	-
Stiffener sleeve	-	-	Brass when used with Brass-junctions	Brass or Stainless steel (1.4571)
Test coil	Cu-DHP R250	Stainless steel (1.4571)	Polytetrafluorethylen (PTFE)	-

5.1. Copper

Standard sensing tube for applications with normal operating temperatures.
-40°C– +300°C (When used at 85°C and above, use metallic pipe clamps).

Copper 5/4mm			
Tubes			
	Sensing tube cooper delivery unit: 3m	TU 5/4 Cu 3m	11-1300034-01-01
	Sensing tube cooper delivery unit:50m	TU 5/4 Cu 50	11-1300009-01-01
Fittings brass			
	Screw Junction straight for TU 5/4 Cu delivery unit: 10 pcs	SJ 5/4 CuZn	11-1300010-01-01
	End plug for Junction straight for SJ 5/4 CuZn delivery unit: 5 pcs	EP 5/4 CuZn	11-1300011-01-01
	T-Junction for TU 5/4 Cu	TJ 5/4 CuZn	11-1300012-01-01
Coils			
	Sensing coil of TU 5/4 Cu length 5m	SC 5/4 Cu 5	11-1300013-01-01
	Test coil of TU 5/4 Cu length 10m	TC 5/4 Cu 10	11-1300014-01-01

5.2. Stainless steel

Sensor tube for applications in corrosive environments and in the food industry for hygienic reasons.
-40 – +300°C (when used at 85°C and above, use metal pipe clamps).

Stainless steel 5/4mm			
Tubes			
	Sensing tube stainless steel delivery unit: 3m	TU 5/4 St 3m	11-1300035-01-01
Fittings			
	Screw Junction straight for TU 5/4 St delivery unit: 5 pcs	SJ 5/4 St	11-1300016-01-01
	End plug for Junction straight for SJ 5/4 CuZn delivery unit: 5 pcs	EP 5/4 St	11-1300017-01-01
	T-Junction for TU 5/4 St	TJ 5/4 St	11-1300018-01-01
	Protection screw for the direct connection of sensing tube TU 5/4 St to the ADW 535 evaluation unit.	PS TU 5/4 St	11-1300043-01-01
Coils			
	Sensing coil of TU 5/4 St length 5m	SC 5/4 St 5	11-1300044-01-01
	Test coil of TU 5/4 St length 10m	TC 5/4 St 10 Set	11-1300050-01-01

5.3. Teflon

Sensor tube for standard applications and for very corrosive and aggressive environments -40 – +85°C.
When using **Teflon sensing tubes**, only classes **A1l** to **Bl** are possible according to EN 54-22.

Teflon 6/4mm			
Tubes			
	Sensing tube teflon 6/4mm delivery unit: 100m	TU 6/4 PTFE 100	11-1300020-01-01
	Sensing tube teflon 6/4mm delivery unit: 50m	TU 6/4 PTFE 50	11-1300019-01-01
	Sensing tube teflon red 6/4mm Delivery unit 100m	TU6/4 PTFE/R 100	11-1300068-01-01
	Sensing tube teflon red 6/4mm Delivery unit 50m	TU 6/4 PTFE/R 50	11-1300067-01-01
Fittings			
	Adapter ADW TU 6/4 PTFE, AD TU 6/4 CuZn	AD TU 6/4 CuZn	11-1300021-01-01
	Screw junction straight PVDF for TU 6/4 PTFE	SJ 6/4 PVDF	11-1300022-01-01
	Endplug for TU 6/4 PTFE, EP 6/4 PVDF	EP 6/4 PVDF	11-1300023-01-01
	T-Junction for TU 6/4 PTFE, TJ 6/4 PVDF	TJ 6/4 PVDF	11-1300024-01-01
	Reduction SJ6/4CuZn-FH5/3PA, RE 6-5 CuZn	RE 6-5 CuZn	11-1300026-01-01
Mounting sets			
	Adapter-Set PA-Teflon (incl SJ 6/4 CuZn, SS4 CuZn, SS3 CuZn)	AD 5/6 CuZn-Set	11-1300036-01-01
	T-Junction-Set Teflontube (incl. TJ 6/4 CuZn, SS4 CuZn)	TJ 6/4 CuZn-Set	11-1300051-01-01
	Screw junction-Set Teflontube (incl SJ 6/4 CuZn, SS4 CuZn)	SJ 6/4 CuZn-Set	11-1300045-01-01
	End plug-Set Teflontube (incl SJ 6/4 CuZn, EP 6/4 CuZn, SS4 CuZn)	TS 6/4 CuZn-Set	11-1300053-01-01
Coils			
	Sensing-Coil 6/4PTFE with mounting clip Screw junction to connect the coil to the Teflon tube must be ordered separately	SC 6/4 PTFE 5m Set	30-4100029-01-01
Stiffener			
	Stiffener sleeve for Teflon sensing tube delivery unit: 10 pcs	SS 4 CuZn	11-1300047-01-01

5.4. Polyamide

Supply line to copper, stainless steel or Teflon sensor tubes:
- 40°C - +100°C for applications above 100°C the transition from the flexible hose to the sensor tube (screw connection) must be outside the monitoring area.

Polyamide 5/3mm			
Tubes			
	Flexible Hose Polyamid 5/3mm (Price per 25m) delivery unit: 25m	FH 5/3 PA 25	11-1300028-01-01
Stiffner			
	Stiffener sleeve brass for FH 5/3 PA delivery unit: 10 pcs	SS 3 CuZn	11-1300029-01-01
	Stiffener sleeve for FH 5/3 PA delivery unit: 10 pcs	SS 3 St	11-1300031-01-01

5.5. Installation material

Installation			
Pipe clamp			
	Pipe clamp black Temperature resistance: -40°C to +85°C delivery unit: 100 pcs	PC 5/6 PA	11-1300032-01-01
	Pipe Clamp brass delivery unit: 10 Pipe clamps and 10 brass stiffeners	PC 5/6 StG	11-1300056-01-01
	Pipe clamp stainless steel Temperature resistance: -25°C to +90°C delivery unit: 10 Pipe clamps	PC 5/6 St	11-1300033-01-01
Maintenance			
	ADW Sensing tube cleaning and maintenance set	ACMS 535	50-0500239-01-01
Spare parts			
	Stiffener sleeve for Pipe Clamp PC 5/6 StG	SS 8 St	11-1300049-01-01

CERTIFICATE OF COMPLIANCE

Certificate Number	20151216-S7197
Report Reference	S7197-20150224
Issue Date	2015-December-16
Issued to:	SECURITON AG Alpenstrasse 20 CH-3052 Zollikofen SWITZERLAND
This is to certify that representative samples of	HEAT-ACTUATED DEVICES FOR SPECIAL APPLICATION Line type heat detectors, Models: ADW 535-1 and ADW 535-2, ADW 535-1HDx and ADW 535-2HDx
	Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.
Standard(s) for Safety:	ANSI/UL 521, Heat Detectors for Fire Protective Signaling Systems CAN/ULC-S530-M91, Heat Actuated Fire Detectors for Fire Alarm Systems
Additional Information:	See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Assistant Chief Engineer, Global Inspection and Field Services

UL LLC

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at www.ul.com/contactus

CERTIFICATE OF CONFORMITY

1. **FIRE PROTECTION EQUIPMENT**
2. **Certificate No:** **FM23FPUS0032**
3. **Equipment:** **SecuriSens ADW 535**
   (Type Reference and Name)
4. **Name of Listing Company:** **SECURITON AG**
5. **Address of Listing Company:** **Alpenstrasse 20, CH-3052 Zollikofen, Switzerland**
6. The examination and test results are recorded in confidential report number:

   3056227 dated 2nd June 2016

7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval Standards and other documents:

   FM 3210:2021

8. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.
9. Approval Guide Listing Category:

   Alarm Signal Initiating Devices, Fire Detection, Heat-Actuated

Certificate issued by:

J.E. Marquedant

4 June 2023

J.E. Marquedant
VP, Manager - Electrical Systems

Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmapprovals.com www.fmapprovals.com

10. **Description of Equipment:**

Model SecuriSens ADW 535 Line-type Heat Detector.

Firmware	Version 01.04.xx.
Features:	
Suitable for both proximity and area detection for indoor and special atmosphere applications (HDx-versions).	
The detector consists of a sensing tube filled with atmospheric pressure air and a cable terminal processor.	
The processor can accommodate either one (Model ADW 535-1 / ADW 535-1HDx) or two sensing tubes (Model ADW 535-2 / ADW 535-2HDx).	
The alarm operating temperature of the system is programmable in either fixed temperature (from 0°C to 300°C) or rate-of-rise option.	
The detector meets the 9.1 m by 9.1 m (30 ft by 30 ft) maximum spacing. Housing to be used in areas with ambient temperature ratings range from -30°C to +70°C.	
The following modules are compatible with the detector: RIM 36 Relay Interface Module with 5 relays (2 units); SIM 35 Serial Interface Board; SMM 535 Serial Master Module.	
Uses a removable SD memory card to log operating data.	
The following sensing tubes can be used: copper, stainless steel and PTFE (Teflon).	
Maximum length of a sensing tube 200 m.	
Operating Voltage: 10.6 to 27 Vdc The power is to be provided by an external power supply from an FM Approved source (fire alarm control panel or an auxiliary power supply unit).	
Power Consumption: 35 / 43 mA (1 / 2 tubes) normal operation and 275 / 290 mA during self test of the sensing tube (for 180 sec) below -20°C.	

11. **Test and Assessment Procedure and Conditions:**

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

12. **Schedule Drawings**

A copy of the technical documentation has been kept by FM Approvals.

13. **Certificate History**

Details of the supplements to this certificate are described below:

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CERTIFICATE OF CONFORMITY

US Certificate of Conformity No: FM23FPUS0032

FM Approvals
Member of the FM Global Group

Date	Description
4 June 2023	Original Issue.

FM Approvals
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FM Approvals

To verify the availability of the Approved product, please refer to www.approvalguide.com

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SCC Accredited CB-P/S OCPS Accredite CCN

Anerkennung
Approval

von Bauteilen und Systemen
of Components and Systems

Inhaber der Anerkennung / Holder of the Approval

Securiton AG
Alpenstrasse 20
CH-3052 ZOLLIKOFEN

Anerkennungs-Nr. / Approval No.	Anzahl der Seiten / No. of pages	gültig vom (TT.MM.JJJJ) / valid from (dd.mm.yyyy)	gültig bis (TT.MM.JJJJ) / valid until (dd.mm.yyyy)
G 214076	12	23.04.2024	22.04.2028

Gegenstand der Anerkennung / Subject of the Approval

Rücksetzbarer linienförmiger Wärmemelder /
Resettable line-type heat detector
ADW 535, ADW 535-HDx

Verwendung / Use

in automatischen Brandmeldeanlagen /
in automatic fire detection and fire alarm systems

Anerkennungsgrundlagen / Basis of the Approval

VdS 2344:2014-07
VdS 2543:2021-03
EN 54-17:2005 + AC:2007
EN 54-22:2015 + A1:2020

Köln, den 23.04.2024

Dr. Reinermann
Geschäftsführer /
Managing Director

i. V. Hesels
Leiter der Zertifizierungsstelle /
Head of Certification Body

Die Anerkennung umfasst nur das angegebene Bauteil/System in der zur Prüfung eingereichten Ausführung

- mit den Bestandteilen nach Anlage 1,
- dokumentiert in den technischen Unterlagen nach Anlage 2,
- zur Verwendung in den angegebenen Einrichtungen der Brandschutz-und Sicherungstechnik.

Bei der Anwendung des Gegenstandes der Anerkennung sind die Hinweise nach Anlage 3 zu beachten.

Das Zertifikat darf nur unverändert und mit sämtlichen Anlagen vervielfältigt werden. Alle Änderungen der Voraussetzungen für die Anerkennung sind der VdS-Zertifizierungsstelle – mitsamt den erforderlichen Unterlagen – unverzüglich zu übermitteln.

This Approval is valid only for the specified component/system as submitted for testing

- together with the parts listed in enclosure 1
- documented in the technical documents according to enclosure 2
- for the use in the specified fire protection and security installations.

When using the subject of the approval the notes of enclosure 3 shall be observed.

This certificate may only be reproduced in its present form without any modifications including all enclosures. All changes of the underlying conditions of this approval shall be reported at once to the VdS certification body including the required documentation.

VdS Schadenverhütung GmbH
Amsterdamer Str. 174
D-50735 Köln

Ein Unternehmen des Gesamtverbandes der Deutschen Versicherungswirtschaft e.V. (GDV), durch die DAkkS akkreditiert als Zertifizierungsstelle für Produkte in den Bereichen Brandschutz und Sicherungstechnik

A company of the German Insurance Association (GDV) accredited by DAkkS as certification body for fire protection and security products

DAkkS Deutsche Akkreditierungsstelle D-ZE-11149-01-01

zur Anerkennungsnummer/ to Approval No. G 214076 vom/ dated 23.04.2024

Der Gegenstand der Anerkennung umfasst folgende Bestandteile.
The subject of the approval comprises the following parts.

Bezeichnung des Gegenstandes Description of Subject	Typ Type	Kenn-Nr. des Inhabers Holder's Registration No.	Anerkennungsnr Approval No.
Produktlinie ADW 535 Modellvarianten / **Product Line ADW 535 Model Version**			
Auswerteeinheit / **Sensor Control Unit**			
1-Kanal-Variante / 1-Channel-Version	ADW 535-1,	11-1000000-01-XX	
1-Kanal-Variante / 1-Channel-Version	ADW 535-1HDx	11-1000001-01-XX	
1-Kanal-Variante / 1-Channel-Version	ADW 535-1 ATEX	50-0500259-01-XX	
2-Kanal-Variante / 2-Channel-Version	ADW 535-2,	11-1000000-02-XX	
2-Kanal-Variante / 2-Channel-Version	ADW 535-2HDx	11-1000001-02-XX	
bestehend aus / **consisting of**			
Hauptplatine / Main Board	LMB 35		
Erweiterungskarte / Extension Board	LEB 35		
Druckmess- und Überwachungseinrichtung / Pressure Gauge and Surveillance Device	LSU 35		
Optionale Module / **Optional Modules**			
SecuriLine eXtended Modul / SecuriLine eXtended Module	XLM 35		G222031
Relais Interface Modul / Relay Interface Module	RIM 36		

zur Anerkennungsnummer/ to Approval No. G 214076 vom/ dated 23.04.2024

Der Gegenstand der Anerkennung umfasst folgende Bestandteile.
The subject of the approval comprises the following parts.

Bezeichnung des Gegenstandes Description of Subject	Typ Type	Kenn-Nr. des Inhabers Holder's Registration No.	Anerkennungsnr Approval No.
Serielles Master-Modul / Serial Master Module	SMM 535		
Serielles Schnittstellen Modul / Serial Interface Module	SIM 35		
Koppler / **Coupler**			
Bosch	FLM-420-RHV-D		G207053
Siemens	FDCIO222		G204029
Siemens	FDCIO224		G207001
Sensorelemente / **Sensing Elements**			
Typ Cu (Kupferrohr) / **Type Cu (Copper Pipe)**			
Fühlerrohr Kupfer 5/4mm / Sensor Pipe Copper 5/4mm	TU 5/4 Cu	T 140 362 d	
Typ St (Stahlrohr) / **Type St (Steel Pipe)**			
Fühlerrohr Edelstahl 5/4mm / Sensor Pipe Stainless Steel 5/4mm	TU 5/4 St	T 140 362 d	
Typ PTFE (Teflon) / **Type PTFE (Teflon)**			
Fühlerrohr Teflon 6/4mm / Sensor Pipe Teflon 6/4mm	TU 6/4 PTFE	T 140 362 d	
Typ PTFE/Ex (Teflon/Ex) / **Type PTFE/Ex (Teflon/Ex)**			
Fühlerrohr Teflon/Ex 6/4mm / Sensor Pipe Teflon/Ex 6/4mm	TU 6/4 PTFE/Ex	T 140 362 d	

Anlage / Enclosure 2

zur Anerkennungsnummer/ to Approval No. G 214076 vom/ dated 23.04.2024

Der Gegenstand der Anerkennung wird durch folgende Unterlagen beschrieben.
The subject of the approval is described by the following documents.

Art der Unterlage Type of Document	Kennzeichnung der Unterlage Identification of document	Datum/ Revision Date/ Revision	Seiten Pages
Prüfberichte / **Test Reports**			
	222501-AU01+SPB03-PB01	04.04.2024	
	222501-AU01+UCE02-PB01	02.11.2023	
	222501-AU01+UCE01-PB01	02.11.2023	
	220012-AU01+SPB03-PB01	28.03.2023	
	220012-AU01+SW01-PB01	22.02.2023	
	220012-AU01+UCE01-PB01	30.11.2022	
	182054-AU01+SW01-PB01	13.03.2019	
	172022-AU01+SW01-PB01	26.02.2018	
	161315-AU01+SW01-PB01	08.08.2017	
	142341-AU02+SPB02-PB01	10.02.2016	
	151430-AU01+SPB08-PB01	17.12.2015	
	142341-AU01+SPB01-PB01	09.11.2015	
	142341-AU01+SW01-PB01	31.08.2015	
	142341-AU01+UCE01-PB01	28.04.2015	
	BMA 14081	29.08.2014	
	122547-AU01-UCE01-PB01	20.01.2014	
	122547-AU01+SW01-PB01	10.12.2013	
ADW 535-1, ADW 535-2			
Technische Beschreibung / Technical Description	T 140 358 f	06.12.2022	125
Datenblatt / Data Sheet	T 140 359 f	06.12.2022	10
ADW 535-1			
Zusammenstellung / Assembly	11-1000000-01-01	19.06.2015	1
Stückliste / Parts List	11-1000000-01-01	30.10.2018	3
Zusammenstellung / Assembly	11-1000000-01-02	10.12.2021	1
Stückliste / Parts List	11-1000000-01-02	061222	1

zur Anerkennungsnummer/ to Approval No. G 214076 vom/ dated 23.04.2024

Der Gegenstand der Anerkennung wird durch folgende Unterlagen beschrieben.
The subject of the approval is described by the following documents.

Art der Unterlage Type of Document	Kennzeichnung der Unterlage Identification of document	Datum/ Revision Date/ Revision	Seiten Pages
ADW 535-2			
Zusammenstellung / Assembly	11-1000000-02-01	19.06.2015	1
Stückliste / Parts List	11-1000000-02-01	30.10.2018	3
Zusammenstellung / Assembly	11-1000000-02-02	10.12.2021	1
Stückliste / Parts List	11-1000000-02-02	061222	1
ADW 535-1HDx, ADW 535-2HDx			
Technische Beschreibung / Technical Description	T 140 458 e	06.12.2022	130
Betriebsanleitung / User Manual	T 140 459 e	06.12.2022	13
ADW 535-1HDx			
Zusammenstellung / Assembly	11-1000001-01-01	22.10.2020	1
Stückliste / Parts List	11-1000001-01-01	400306	1
Zusammenstellung / Assembly	11-1000001-01-02	10.12.2021	1
Stückliste / Parts List	11-1000001-01-02	061222	1
ADW 535-2HDx			
Zusammenstellung / Assembly	11-1000001-02-01	22.10.2020	1
Stückliste / Parts List	11-1000001-02-01	400306	1
Zusammenstellung / Assembly	11-1000001-02-02	10.12.2021	1
Stückliste / Parts List	11-1000001-02-02	061222	1

zur Anerkennungsnummer/ to Approval No. G 214076 vom/ dated 23.04.2024

Der Gegenstand der Anerkennung wird durch folgende Unterlagen beschrieben.
The subject of the approval is described by the following documents.

Art der Unterlage Type of Document	Kennzeichnung der Unterlage Identification of document	Datum/ Revision Date/ Revision	Seiten Pages
ADW 535-1 ATEX			
Technische Dokumentation / Technical Documentation	TD 003 007b de	01.12.2023	16
LMB 35			
Stückliste / Parts List	4000659-04	30.10.2018	11
Stromlaufplan / Circuit Diagram	4000659-04	30.10.2018	6
Bestückungsplan / Assembly Diagram	4000659-04	25.01.2019	3
Stückliste / Parts List	4000659-05	101221	4
Stromlaufplan / Circuit Diagram	4000659-05	10.12.2021	6
Bestückungsplan / Assembly Diagram	4000659-05	10.12.2021	3
LEB 35			
Stückliste / Parts List	4000658-01	14.02.2014	4
Stromlaufplan / Circuit Diagram	4000658-01	31.10.2013	1
Bestückungsplan / Component Mounting Diagram	4000658-01	31.10.2013	2
LSU 35			
Zusammenstellung / Assembly	4100135-01	14.12.2014	1
Stückliste / Parts List	4100135-01	16.10.2014	2
Stückliste / Parts List	4000660-01	14.10.2013	2
Stromlaufplan / Circuit Diagram	4000660-01	22.01.2013	1

zur Anerkennungsnummer/ to Approval No. G 214076 vom/ dated 23.04.2024

Hinweise für die Anwendung des Gegenstandes der Anerkennung nach Anlage 1.
Instructions for the application of the subject of approval (see enclosure 1).

Der ADW 535 ist ein integrierender rücksetzbarer linienförmiger Wärmemelder mit einem Wärmedifferential- und/oder Wärmemaximal-Ansprechverhalten. Er eignet sich für den Einsatz in automatischen Brandmeldeanlagen.

Der linienförmige Wärmemelder besteht aus einer Auswerteeinheit und einem oder zwei Sensorelement(en).

Der linienförmige Wärmemelder Typ ADW 535 beinhaltet die Auswerteeinheiten in den folgenden Ausführungen:

Typ	Anzahl der Kanäle	Umweltklassifizierung
ADW535-1	1	III
ADW535-1HDx		
ADW 535-1 ATEX		
ADW535-2	2	
ADW535-2HDx		

Die Anerkennung umfasst ausschließlich folgende Sensorelementetypen (Fühlerrohre):

Typ	Material	Umweltklassifizierung
TU 5/4 Cu	Kupfer	III
TU 5/4 St	Edelstahl	
TU 6/4 PTFE	Teflon	
TU 6/4 PTFE/Ex	Teflon/Ex	

Der lineare Wärmemelder Typ ADW 535 entspricht den folgenden Ansprechklassen:

Typ	Material	Ansprechklassen
TU 5/4 Cu	Kupfer	A1I, A2I, BI, CI, DI, EI, FI, GI
TU 5/4 St	Edelstahl	
TU 6/4 PTFE	Teflon	A1I, A2I, BI
TU 6/4 PTFE/Ex	Teflon/Ex	

zur Anerkennungsnummer/ to Approval No. G 214076 vom/ dated 23.04.2024

Hinweise für die Anwendung des Gegenstandes der Anerkennung nach Anlage 1.
Instructions for the application of the subject of approval (see enclosure 1).

The ADW 535 is an integrating resettable line-type heat detector with the response behavior of a rate of rise resp. static heat detector. It is suitable for the use in automatic fire detection and fire alarm systems.

The line-type heat detector consists of an evaluating unit and one or two sensor pipes.

The line-type heat detector comprises the evaluating units in the following versions:

Type	Number of channels	Environmental classification
ADW535-1	1	III
ADW535-1HDx		
ADW 535-1 ATEX		
ADW535-2	2	
ADW535-2HDx		

The approval exclusively comprises the following types of sensor elements (sensor pipes):

Type	Material	Environmental classification
TU 5/4 Cu	Copper	III
TU 5/4 St	Stainless steel	
TU 6/4 PTFE	Teflon	
TU 6/4 PTFE/Ex	Teflon/Ex	

Line-type heat detector type ADW 535 complies with the following response classes:

Type	Material	Response class
TU 5/4 Cu	Copper	A1I, A2I, BI, CI, DI, EI, FI, GI
TU 5/4 St	Stainless steel	
TU 6/4 PTFE	Teflon	A1I, A2I, BI
TU 6/4 PTFE/Ex	Teflon/Ex	

zur Anerkennungsnummer/ to Approval No. G 214076 vom/ dated 23.04.2024

Hinweise für die Anwendung des Gegenstandes der Anerkennung nach Anlage 1.
Instructions for the application of the subject of approval (see enclosure 1).

The release threshold values are depending on the used sensor pipe length, the type of the used sensor and the chosen response class. In order to reach the response behavior according to EN 54-22, the respective evaluation unit shall exclusively be parameterized by means of the calculation program ADW HeatCalc or via the EasyConfig switch settings according to the specifications of the technical description T 140 358 or T 140 458.

When using optional module XLM 35 the line-type heat detector can be operated at the loop of a control and indicating equipment.

Interface module XLM 35 comprises a short circuit isolator.

For planning the projection instructions of the manufacturer,
Document No. T 140 358 or T 140 458 shall be observed.

The evaluation unit must be fed by a power supply equipment according to DIN EN 54-4.

Technical data (manufacturer's specifications):

Operating voltage (DC):	9 V to 30 V
Relay contact load (DC):	50 V / 1 A
Ambient operating temperature:	-30 °C to +70 °C

Requirements acc. to VdS 2543:2021-03:

Clause	Requirements	Evaluation
5.2	Reset function (option with requirements)	Requirement fulfilled
5.3	Software controlled components	Requirement fulfilled
5.4	Electromagnetic compatibility (EMC)	Requirement fulfilled
5.5	Fault monitoring and indication of degraded transmission paths (option with requirements)	Not applicable
5.6	Components for triggering of fire extinguishing systems	Requirement fulfilled
5.7	Enclosure protection	Not applicable

PFHd / SIL – DEKLARATION
DECLARATION of PFHd / SIL
Gemäss / *According IEC EN 61508*

Wir
We

SECURITON AG, Alpenstrasse 20, CH 3052 Zollikofen, Schweiz

erklären in alleiniger Verantwortung, dass das Produkt
declare under our sole responsibility that the product

Line-Type Heat Detector

ADW 535-1	Art.-Nr.: 11-1000000-01-01
ADW 535-2	Art.-Nr.: 11-1000000-02-01
ADW 535-1HDx	Art.-Nr.: 11-1000001-01-01
ADW 535-2HDx	Art.-Nr.: 11-1000001-02-01

Bestückt mit: / *Equipped with:*

\- Art.-Nr.: -

Folgende PFHd-Rate aufweist:
has the following PFHd value:

	ADW 535-x
Kumulierte Betriebsdauer *cumulative service time* [h]	**197'471'376**
Anzahl potentiell gefährlicher Fehler *amount of dangerous failures*	**6**
Potentiell gefährliche Fehlerrate [**PFHd**] *Probability of a Dangerous Failure per Hour* [**PFHd**]	**5.945 E-08**
Resultierende / *Resulting* **MTTFd**, 90% CI [h]	**16'819'538**
Resultierende / *Resulting* **SIL**	**SIL 2**

Erhebungsmethode:
- Gemäss IEC EN 61508-2, Kap. 7.4.4.3
- Ausgeführt durch: Statistics, RAMS & QM, Thomas Reiter (Dipl.-Phys.)

Prediction method:
- *According IEC EN 61508-2, paragraph. 7.4.4.3*
- *Analyst:* Statistics, RAMS & QM, Thomas Reiter (graduate Physicist)

Ort und Datum der Ausstellung / *Place and date of issue*

Zollikofen, den 24.03.2021

Name und Unterschrift
Name and signature

.....
Arnd Rogner

Leiter Strategisches Geschäftsfeld
SECURITON AG

Name und Unterschrift
Name and signature

.....
Stefan Brügger

Senior Product and Regulation Manager
SECURITON AG